

PER. NOT EN'D.

THE IRON AGE

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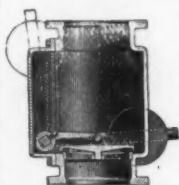
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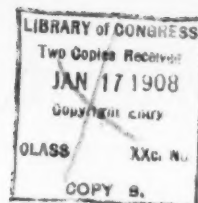


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THE IRON AGE

New York, Thursday, January 16, 1908.



The Sheldon Retort Coke Oven and Process.

A Chamber for Precoking and the Coal Under Compression During the Coking Operation.

BY S. B. SHELDON, BUFFALO.*

In the last few years the commercial aspect of the manufacture of coke for blast furnace purposes has been forced to the attention of both the pig iron producer and the coke manufacturer with ever increasing acuteness. The technical good quality of the so-called Connellsville coke, which we used to hear so much of, has ceased to be anything but pleasant fiction, except in the case of a few specific operations that have been conserved by cer-

What the New Process Proposes.

Of any number of processes for the manufacture of a given article, if the quality remains the same with each, it becomes a matter of simple commercial computation to know which to adopt. This appears to be true of practically every commodity on earth except the very necessary and, to put it mildly, disappointingly variable material called coke, which is so largely the basis of the

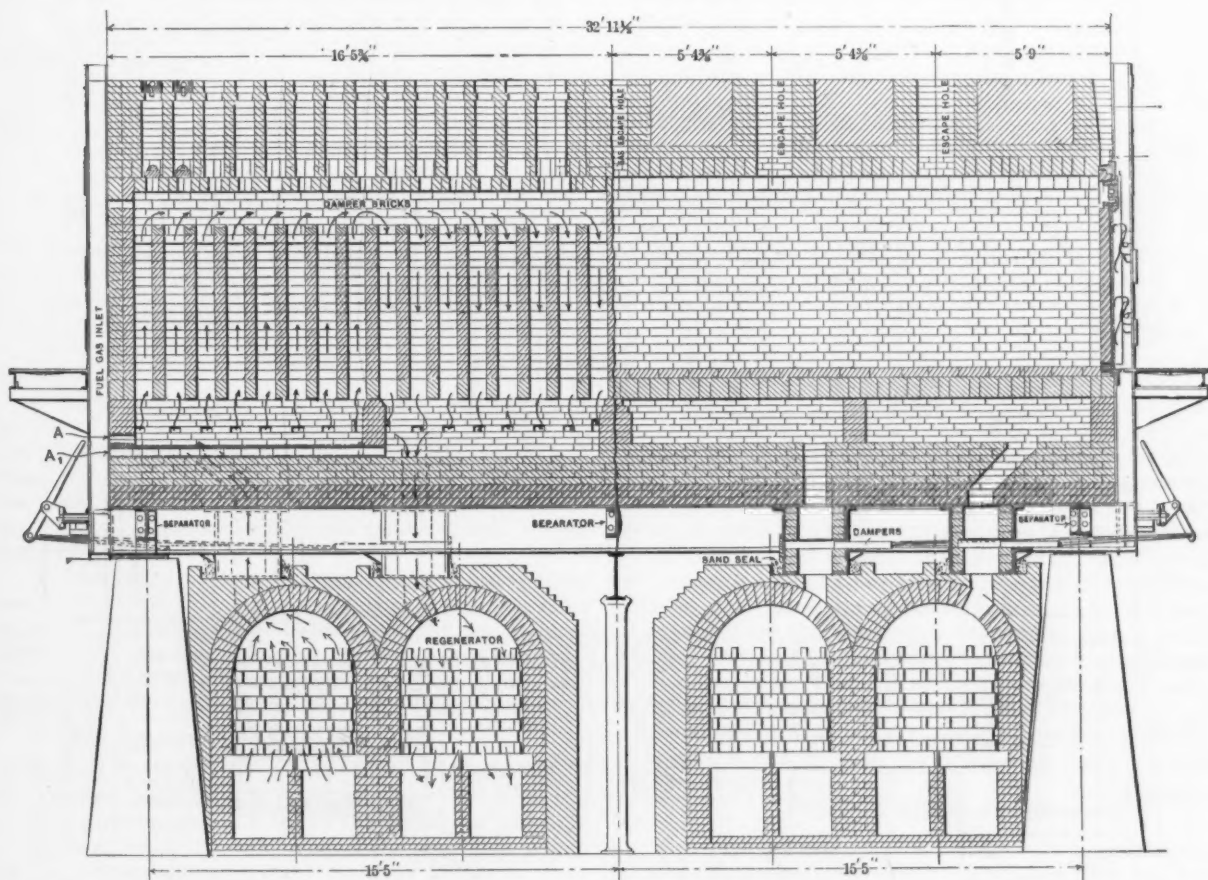


Fig. 1.—The Sheldon Retort Coke Oven in Section, One Half Through the Coking Chamber and the Other Half Through the Flue System.

tain of the large producing companies for special uses. The tendency for a number of years has been toward deterioration in the physical quality, from the tremendous pressure brought to bear upon production, and on account of increasing sulphur and ash, and in many cases phosphorus, owing to change in the character of the coal as mining has proceeded. Relief is to be found in a process which will conserve the coal supply and produce a larger yield of merchantable coke from a given tonnage of raw material, which means a lower loss in conversion, this in turn giving a lower percentage of phosphorus, sulphur and ash than the more wasteful process. If at the same time this process makes available for use and for sale valuable by-products which are now thrown away in the production of a vast majority of our coke, it must of necessity take precedence over one which offers a less theoretical commercial advantage.

* General superintendent of the Lackawanna Steel Company.

iron industry. It is not the intention in this article to go into the discussion of the wherefore of good or bad coke from this or that process, but rather to make a general commercial comparison between the merits of the beehive and retort ovens, and to suggest an oven and process which appear to solve a large number of technical difficulties in the manufacture of coke. This process, which is almost revolutionary, at the same time offers possibilities of commercial return and regularity of product, with the elimination of a considerable amount of operating complication, in a more logical manner than any similar device which has been placed on the market in recent years. The figures quoted should not be considered as statistically accurate, but are cited in a general way for a comparison of the beehive and retort processes, and the article is written with the idea that a large proportion of those who read it are familiar with many details of both. In developing the new process two

things were kept in mind: The commercial needs of the producer of coke, whose path has certainly not been one of roses, in view of the labor situation of the last three years at least, and also the technical requirements of blast furnace managers, upon whom the burden finally falls, and who, it must be admitted, have been patient in long suffering.

Beginnings of the Retort Oven.

The beehive oven came into existence about 1750 in England, and in 1835 in the United States. In this country at least it has marched down the commercial highway, brushing aside all competitors—really having little or no competition until within the last four years. About 1856 the first retort oven was introduced in Europe, and it has progressed to such an extent that for many years coke in Germany has been synonymous with by-product coke. While the old process has maintained its supremacy in this country, its com-

lows that it must be commercially desirable at other points or its erection would cease.

Possible Saving on the Pennsylvania Output.

The production of beehive coke in Pennsylvania in the year 1907 was probably over 20,000,000 tons. If we estimate the cost of this coke and that of an equivalent amount made in a retort oven, with by-product recovery, at the present price of coal, sulphate of ammonia and of gas at Pittsburgh, we find that it has cost about \$15,000,000 more than it would to produce it in retort ovens. This estimate has taken into consideration a probable decrease in the price of sulphate, and the value of the tar has been neglected, in order to compensate for the probable

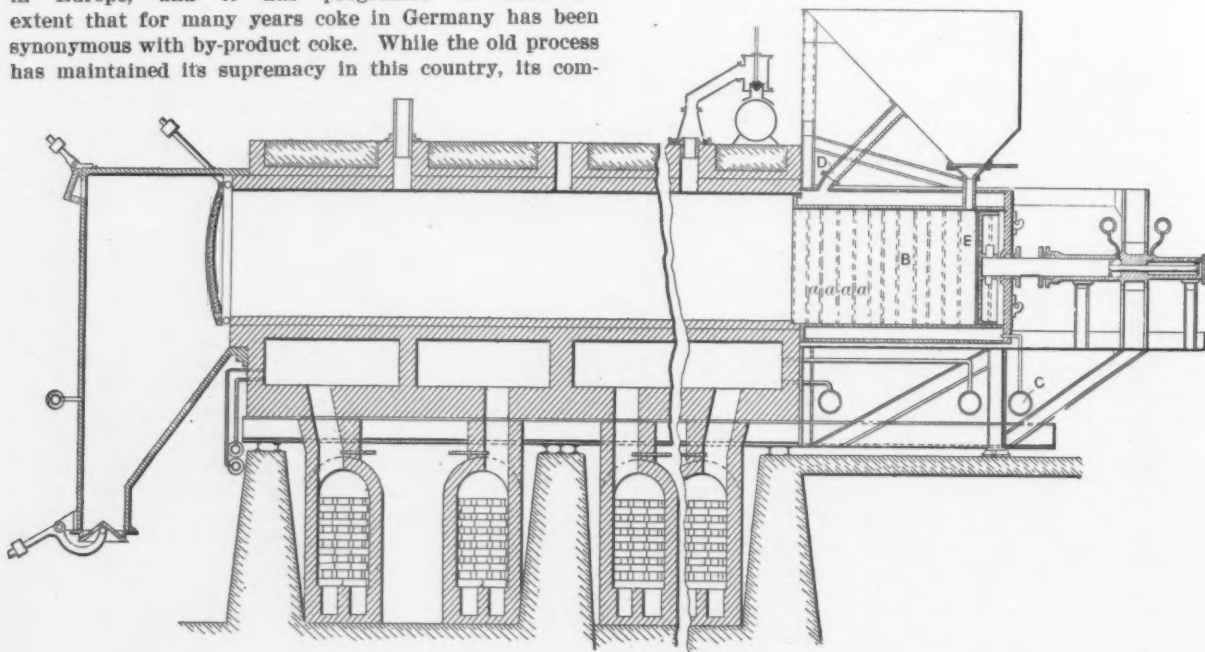


Fig. 2.—The Precoking Chamber and Compressing Apparatus Applied to Existing Retort Ovens.

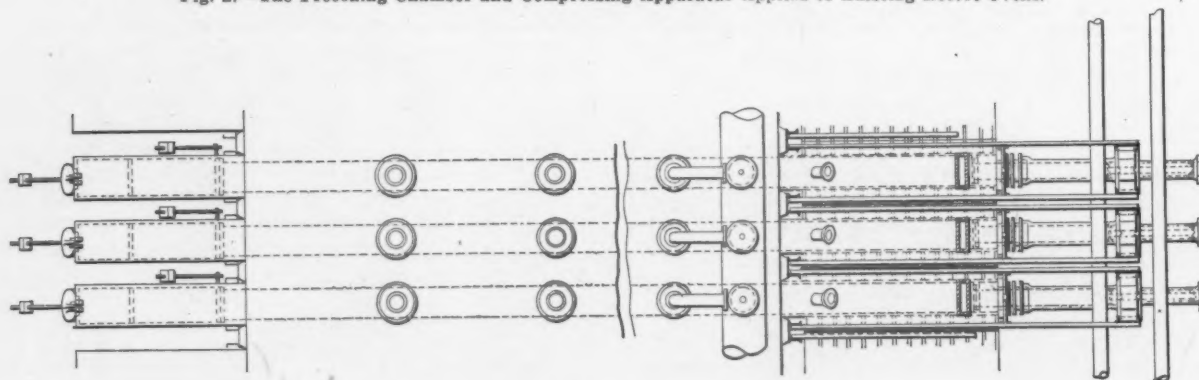


Fig. 3.—Plan View Showing General Arrangement of the System.

petitor has superseded it in Germany in a comparatively short time.

In 1894 the Cambria Steel Company installed at Johnstown, Pa., a battery of retort ovens. The plant has been steadily added to, until now practically all the company's coke is made by this process. The use of retort ovens in the United States since the original installation at Cambria has so extended that in 1907 the production was, approximately, 5,000,000 tons of coke by this process, or probably 20 to 25 per cent. of the total produced in the State of Pennsylvania. The retort oven has forced its way to the front thus far in the face of high installation cost, as compared with that of a plant for an equivalent output from beehive ovens, and also in the face of a decided prejudice on the part of the average furnaceman against retort or by-product coke. It must be self-evident that its use in Europe must be commercially successful, otherwise new installations would cease. It is evident also that this method of manufacture is satisfactory to the pioneers of the process in this country, and it fol-

lows that it must be commercially desirable at other points or its erection would cease.

decrease in selling price if such a large quantity of sulphate were placed on the market as would result from the production of the tonnage of coke referred to above. This is permissible, since the minimum value of the tar produced would be equal to a corresponding number of pounds of coal for fuel purposes, and actually would be considerably greater.

The figures indicate in a general way the relative economic conditions. It has been demonstrated time and again in this country that a ton of by-product coke will make as much iron in the same furnace, from the same ores, as will a ton of average beehive coke. Exceptions may be taken to this statement, but it is a fact, and is well known to those who have impartially investigated both sides of the question. We have, then, a somewhat incongruous state of affairs—namely, a crude, wasteful method successfully competing with one having economies never claimed for the old process, and which produces under certain conditions an article equivalent in quality. It would seem a pertinent question to ask why this waste

is still allowed to go on, and why the larger portion of our coke is still made as in the days of our greatgrandfathers, with the same, or, in most cases, a larger waste. It is not sufficient to pass the question by with the answer that because of our plethora of raw material, we have not yet reached the economic state, where maximum economies are desirable or necessary. Neither would the assertion that the cost of the investment per unit of product is prohibitive satisfactorily answer the question. It is taken for granted that the inherent theoretical economies of the retort process are accepted without question.

Why Not More Retort Ovens.

Some other reason why retort ovens long ago have not driven the more poorly equipped competitor from the market must be looked for. As a matter of fact, the arguments are many and varied. In the opinion of the writer, they can be summarized as follows:

1. The fact that very few people in this country thoroughly understand the rationale of both processes. For instance, there are many who are skilled in the art of manufacture of coke in a beehive oven who know practically nothing of even the mechanical side of the retort oven, to say nothing of the chemical side thereof. There are others who are builders of this or that type of oven whose conception of the merits of their own device is possibly of a higher order than may be realized when subjected to the rigorous demands of commercial operation.

2. There has always been a veil of mystery surrounding the manufacture of retort coke, which has not tended to increase the use of the higher grade machine.

3. The retort oven costs more money to erect.

4. Possibly the crucial reason is the fact that while a larger range of coals may be coked in a retort oven than in a beehive oven, with unquestionably greater efficiency both as to quality and cost, yet it is not a machine for universal use in the present state of the art, for the following reasons:

- a. It is very difficult to make satisfactory blast furnace coke out of coal that runs over 28 per cent. in volatile constituents; and it so happens that the majority of those who might be attracted to the commercial side of the retort process, unfortunately for both themselves and the process, possess coal which will make a brittle coke in a retort oven.

- b. The retort oven is a relatively complicated, high cost machine, in the operation of which a considerable degree of technical skill is required as well as executive ability. The product is susceptible to the personal equation not only of the superintendent, but of every man who is concerned in the manipulation of the oven.

Essentials of a Retort Oven.

Refined as the retort process is by comparison with the beehive, there is still much to be desired as to the mechanical operation. As far as the selection of the type of machine is concerned, it would appear that this should be the simplest part of the proposition if viewed from the standpoint of one about to purchase an ordinary regenerative furnace. Stripped of its mystery, a retort oven in its elements is a simple type of furnace wherein to heat coal. Like all furnaces for any specific purpose, it has certain functions to fulfill to be commercially permissible. The first of these must be even distribution of heat throughout its entire length. Without this feature no satisfactory coke can be made. If a part of the oven runs cold and part hot, there will be finished coke in one place and unfinished coke in another, resulting in a variable mass in the length of the oven.

The apparatus should be substantial and durable, with as few complications as possible, both structural and operative. It should be built of brick of as nearly standard shapes as possible, and it should be cheap. These considerations are not usually given sufficient weight in the selection of an oven. It is a common expression that this or that specific type makes good or bad coke out of the same kind of coal. The fact is that there is no oven on the market, either in this country or abroad, that cannot be made to produce good coke; neither is there any oven which will not produce bad coke from coals

within the range of the process. A large number of the ovens on the market are structurally inadmissible. Another class does not give a satisfactory distribution of heat, although it is only fair to say of this latter kind that all of them can be made to produce satisfactory coke in the hands of skilled operators. Those of still another class, while they possess the necessary and desirable features of such a machine, are unduly expensive to construct and are imperative in their demands for space, creating in some cases an objectionable and expensive delivery of coke on the discharge side of the oven, and their complicated structure renders safe the prediction of early and frequently recurring repairs.

Features of the Sheldon Oven.

In view of these conditions, the writer has been prompted to devote some thought to the improvement of the retort process, having in mind the possible economies and the necessity for some economic change in the manufacture of coke in this country, as we with such rapidity approach the conditions of our European competitors in depleted fuel reserves of the higher quality. This leads to a consideration of the oven and process upon which patents have recently been granted the writer.

The oven is shown in Fig. 1, the cut representing a broken section longitudinally of the oven, one-half being through the coking chamber and the other half through the flue system. The burners are shown at A A. The interior burner is made up of hollow brick provided with shoulders, making a male and female joint which may be clayed up and made gas tight. This burner lies loosely in the floor of the combustion chamber as shown. It is very evident then that the gas passes up through eight flues at a time in place of 16, as in the ordinary construction. The total surface heated is the same as in the ordinary construction, since we have two sections of flues carrying the immediate products of combustion, the sum total being equal to the length of the flue section in ordinary use. The damper brick on top of the flues regulate the draft of each flue in proportion to its distance from the stack. It will also be noted that various combinations of the travel of the gases may be made should occasion arise. The paths of travel are shown by the various arrows. This will do away completely with the occurrence of zones of variable temperature, which are liable to be present in every oven thus far built, regardless of the regulation usually provided in the attempt to equalize this effect. There is probably no oven built to date that is not subjected to trouble upon exposure to severe winds blowing continuously from one direction, impinging on the end of the oven. Under such conditions one-half of the oven in question can be reversed once an hour, or as often as may be necessary to preserve the heat near the door of the end exposed, the other half being operated independently.

Points in Construction.

Structurally, this oven is simple. It embodies the strong structural features of a well-known type, but will do away with the only point susceptible of logical criticism on the type in question—the equalization and the preservation of the uniformity of the heat. The oven, as shown in the drawing, is built on beams, which are carried on retaining walls, the floor of the oven resting on the sole plate on top of the beams, thus effectually sealing the oven and allowing the brick to slide in case of expansion. Connection to the regenerators is made by means of brick lined metal tubes, riveted to the sole plate and connected to the regenerators by means of a sand seal. This makes the superstructure practically independent of the regenerators, so that no broken connections result from difference in expansion; it also provides a means whereby the elevation of the oven proper may be made any height desirable without the necessity of raising the regenerators.

It should be noted that the number of special shaped brick is reduced to a minimum, the oven being practically built of tongue and groove rectangular brick. It is claimed for this oven that greater heat uniformity with less operative complications may be obtained than in any type yet proposed, and that it can be built at a much

lower cost than any other desirable type now in the market.

Preheating the Coal.

The process is continuous, and can be applied to practically all retort ovens. It consists in general of preheating the coal outside of the oven proper, and then charging by gravity into a metal chamber forming an extension to the coking chamber and flue system. The chamber is made of iron, and is called the precoking chamber. It is provided with a door and a hydraulic plunger for each oven, the plunger working inside the door. In present retort practice 50 per cent. approximately of the coking time is absorbed in raising the geometrical center of the mass within the oven to about 400 degrees F. This is shown by actual test in Canada, Europe and the United States of ovens from 14 to 22 in. wide, and of various types. Since practically all coals will stand a temperature approaching 400 degrees for a reasonable length of time without suffering physical change as far as their coking properties are concerned, it follows that a logical advantage may be obtained both in fuel consumption and decrease in time of coking, if this fact is taken advantage of and the coal preheated approximately to this temperature by waste heat preliminary to its being charged into the precoking chamber.

Fig. 2 shows diagrammatically, the adaptation of this process to a retort oven. B is the precoking chamber. Gas is introduced at C, and ascends through the flues *aa*, formed by ribs on the apparatus, transmitting heat to the iron, and leaving the apparatus through the flue D. It ascends around and through a bin system continuous in structure, and extending over the chambers devised to heat coal before its introduction into the precoking chamber. The coal is heated to somewhat below 400 degrees. It is then fed in front of the plunger E through a gate provided for the purpose, and exposed to the coking action. Fig. 3 shows the general arrangement in plan.

The Method of Compression.

It has been found that under these conditions at the end of one hour the mass is superficially coked to such an extent that it may be moved by the plunger. After introduction into the coking chamber the coal is compressed by the action of the plunger to a considerable degree. It should be noted here that we have an effective means for the compression of coal in a coking chamber and the maintenance of that pressure in whole or in part during the coking operation. It has been found that three hours' exposure in the iron apparatus surrounds the mass with coke of sufficient strength to push a mass equal to that in an oven of the ordinary length and width ahead of this superficially coked mass. This mass may be compared to a girder, built of coke on the outside and coal in the interior. At the end of the first hour the plunger is advanced one-third of the length of the precoking chamber; the plunger is then withdrawn and coal allowed to feed in. At the end of the second hour the operation is repeated, and so on indefinitely. The discharge of the finished coke is effected by trapping the coke off, by means of a depending chamber provided with two separated valves, shown diagrammatically at the discharge end of the oven. Since the coal is effectually compressed and pressure maintained during the coking action, a harder coke would be expected than in the ordinary method; and an oven of this description has made, from a 35 per cent. volatile coal, coke having a crushing strength of 1100 lb. per square inch. It would also be expected that the tendency to produce the initial cross fracture so common in the retort process would be eliminated in whole or in part. This is found to be the case.

As the coal is introduced progressively at the rate of a fractional part of an oven per hour, a gas more uniform and much higher in heat units will be obtained. The gas must of necessity be driven through the coal in the precoking chamber, there being no other means of egress. It is therefore fair to expect a decided chemical change, which would result in a radical difference in the chemical composition of the tar. Samples taken from the experimental oven show as high as 8½ per cent. in phenol and as low as 9 per cent. of fixed carbon, thus making the tar higher in value than ordinary retort tar.

A 200 Per Cent. Production.

In actual practice the plant will be designed to operate the process in units of 10. For instance, in a battery of 50 ovens, there would be five operative units of 10 each, the movement of one valve only being necessary to move 10 plungers and discharge an amount equal to the length exposed 1 hr. in the precoking chamber from each oven. It has been found in an experimental oven, that a rate of coking may be obtained equal to 200 per cent. of the rate of the oven when charged from the top with unprepared coal and coked in the ordinary manner, the same heating means being used in both cases. Since the early part of the coking operations are carried on in contact with iron walls in place of brick walls, only a very low temperature head is necessary, which will be well within the limits of the cast iron. On the basis of the operations of a given oven at 200 per cent. of present production now obtained per 24 hr., the rate of discharge will then be one-twelfth of the length of an oven each hour. We therefore have in 10 receiving chambers at the end of each hour, a little more than the equivalent of 83 per cent. of the contents of one oven. A standard gauge car especially adapted for the purpose, will receive this coke quenched and ready for shipment, the quenching having been done in the discharge chamber between the two separated valves. This feature renders steam quenching possible, which will insure the delivery of moisture free coke at the shipping point. It should also be noted that practically the only handling the coke gets is in sliding from the oven into the chamber and from the chamber into the car. Since hot coke breaks up less than cold coke under similar conditions, and since the handling is reduced to a minimum, a very small amount of coke breeze will result, thereby increasing the yield of coke and saving considerable money now expended in cleaning up.

The gas collecting main will be placed very near the entrance end of the oven, and since the maximum temperatures will not be obtained at this point on account of the continuous introduction of fresh material, relief may be expected from carbon deposits, doing away with the trouble and expense of tar chasing, so well known to retort oven operators. As the oven is never empty and the brickwork is never completely cooled, but remains at uniform temperature, favorable conditions for the long life of the brickwork have been introduced. It should be noted also that the precoker is slightly less in width than the oven proper. This reduces the wear of the oven walls by confining abrasion to the bottom of the oven.

Since 50 per cent. of the work is done outside of the oven proper and with waste heat, and in any coke oven as ordinarily operated practically all the gas is burned that the combustion areas will allow during the entire time of the conversion from coal to coke, it follows that just as in any producing operation requiring heat the amount of fuel used per ton of material will be dependent on the rate of production of that material per unit of time, other things being equal. It can readily be seen, therefore, that large savings in gas may be expected from this apparatus, both from the work done by waste heat outside of the oven, the increased heat transmission efficiency of the primary iron chamber as against brick, and the maintenance of the temperature of the oven from the progressive introduction of coal.

Labor Saving Through Continuous Operation.

Through the elimination of operations by the application of the continuous principle and the increased output made possible, a large saving of labor may be expected. A comparison of the number of men necessary for the two processes is interesting. In a plant of two batteries and comprising 100 ovens, operated by existing methods, it would be possible to so arrange and equip it to operate with the following number of men per turn:

1 foreman.	2 tar chasers.
1 pusherman.	1 mud mixer.
1 quenching car operator.	4 door luters.
1 doorman on top.	2 door operators.
2 standpipe men	—
1 larryman.	17 men, or 34 for 24 hr.
1 heater.	

The product, operating with about 100 per cent. effi-

ciency, assuming the units to be five tons, would therefore be 500 tons per 24 hr., or 14.7 tons per man. However, it should be noted here that this condition has never been obtained in present practice. With the continuous process, the following men would be necessary per turn for the purposes specified:

- 1 heater for each battery who will be in complete charge of battery.
 - 1 larryman.
 - 1 receiving car man.
 - 1 man on top for each battery, who will operate discharge door and who will quench the coke in the discharge chamber.
- Total for 24 hr. and two batteries, 12 men.

The product, based on 200 per cent. of the present output, would be 1000 tons, or 83 tons per man. The ratio of efficiency will be, therefore, 14.7 to 83 tons per man. Another very apparent advantage in the continuous process will be absolute freedom from black ends and non-uniform coke resulting from variable temperatures, since all parts of the mass must pass by each point in the oven, and also since all the coke will be produced from coal which is, to say the least, moisture free before entering the oven. Further, since the receiving car will carry away each hour a portion of the material from 10 ovens, a still further uniformity of product may be expected. It has been found by experiment that a rate of coking may be obtained by this process which will completely coke the mass some distance before the discharge end of the oven is reached, even when working at a rate 100 per cent. greater than that obtained in present practice.

The possibilities under this process of improving the present method of operating retort ovens by affording a logical mechanical control, replacing the cumbersome and relatively crude methods now necessary owing to the limitations of the present machine, the maintenance and betterment of the economic advantages inherent in the retort process, the widening of the range of raw material usable, the close regulation and improvement in the quality of the product, will, it is believed, furnish food for reflection to both producer and consumer of coke.

Customs Decisions.

Notice of 30 Days Before Changing a Duty.

The Treasury Department, acting on the petition of influential importing interests of the country, announces that hereafter a notice of 30 days will be given when it is proposed to change from lower to higher rates of duty. This concession is made by the Government, in order to obviate the disadvantages under which importers have suffered in the past by reason of sudden changes in the classification of imported merchandise. An official statement on the subject says:

Under the operation of the present tariff law for the past 10 years, changes in classification to higher rates have been made, as is well known, without previous notice, resulting, in instances, in considerable loss to importers, especially on those lines of merchandise carrying a very small margin of profit. Under the recent instructions of the Department, the importing trade will have 30 days' notice of intended raise in the rate of duty to be applied to any particular line of merchandise. This will give fair opportunity for the readjustment of contracts and terms of sale to meet the prospective change of tariff conditions. During the pendency of such 30 days' notice the old prevailing rate will be returned as the advisory classification by the appraiser, while in the meantime the matter will be submitted to the Treasury Department, and, in the absence of contrary instructions therefrom, the higher rate will become effective on all like importations on and after the date fixed in the notice to the importer.

This question does not, of course, apply to errors, intentional or accidental, made by importers or brokers when making entry, but where changes are contemplated in the rate of duty that has prevailed in the official returns of appraising officers. It is desired by the Department that as wide publicity as possible be given in each instance of proposed change of classification to a higher rate, and besides especially notifying the importer upon whose invoice the question first arises, the appraiser's office will furnish to the press, and also conspicuously post on bulletin boards throughout the Public Stores, notice of any such contemplated advance in rate.

In view of the fact that the Board of General Appraisers and the courts have been for some years threshing out questions of classification, most of which would now appear as permanently settled under the present law, it is not expected that the number of changes from lower to higher rates will be very large.

Duty on Statuary.

In a decision handed down by the United States Circuit Court of Appeals at New York, it is held that, regardless of the fact that artisans perform work on metal statues, they are nevertheless to be deemed "statuary" within the meaning of that word, as used in the tariff act, and accordingly dutiable at the rate of 15 per cent. ad valorem under the terms of the reciprocity treaty with France. The case before the appellate tribunal stood in the name of Tiffany & Co., who objected to the action of the customs authorities in exacting duty on a statue of ivory and metal representing La Bellona, the Roman goddess of war, as a manufacture of ivory at 35 per cent. ad valorem. The work was one of the last pieces wrought by Gerome, the famous French sculptor, and the claim was made by the importers that the piece should be classified as "statuary" with duty at only 15 per cent. The Board of General Appraisers, while acknowledging that the figure was artistic in its production, held to the view that as the tariff stands it is requisite to the entry at the lower rate of duty that all of the work on a statue be done by the professional sculptor himself. On this account the board overruled the contention of the firm, and affirmed the action of the Collector of Customs in classifying the work as a "manufacture." The Circuit Court, however, took a different view, and held that, while some parts of the statue was executed by ordinary workmen, it was all done under the personal supervision of M. Gerome.

Sundry Decisions.

The Board of General Appraisers has decided that knives having deerfoot handles, with folding blades 5 in. long, are to be regarded as "hunting knives," with duty at the rate of 45 per cent. The issue came before the tribunal on appeal by George Borgfeldt & Co., New York, who objected to the action of the customs authorities in returning the articles for duty as clasp knives at the compound rates applicable under the provisions of paragraph 183 of the tariff act. The protest is sustained.

The board has taken favorable action on a protest filed by the Electric Goods Mfg. Company, Boston, it being held that hollow cylinders of carbon are dutiable properly under the tariff provision for porous carbon pots for electric batteries. The tribunal directs that the collector's assessment of 35 per cent. under the provision in the law for "carbon not specially provided for" be set aside.

In a finding against the contention of A. Kastor & Bro., New York, the board lays down the principle that diminutive pen knives, with cutting blades and other metal parts of cheap Bessemer steel, are not to be deemed "toys" within the meaning of the word as used in the tariff. Instead, the board rules that such articles are dutiable as "pen knives" at the rate of 40 per cent.

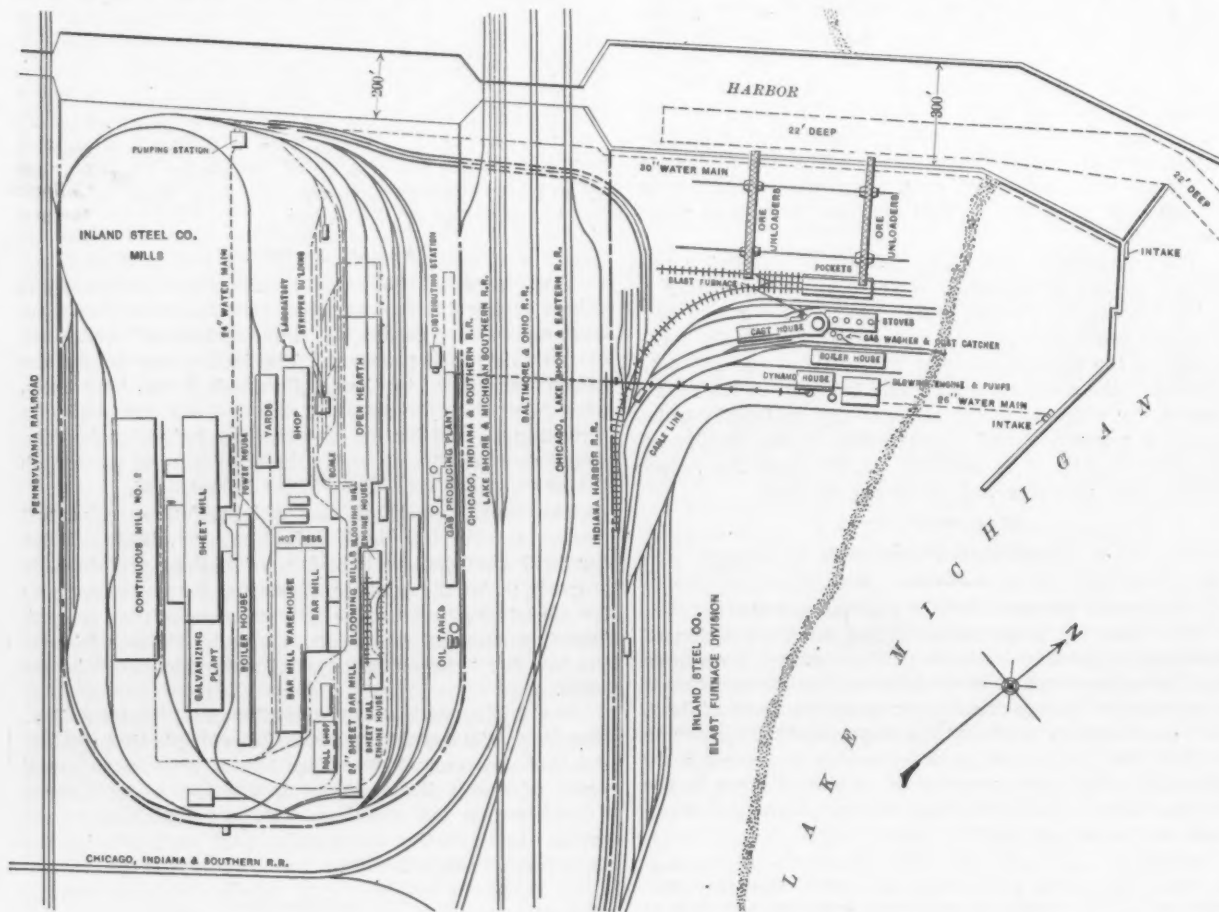
Berger Salesmen Meet.—The annual meeting of the salesmen of the Berger Mfg. Company, Canton, Ohio, was held during New Year week. Thirty-two travelling salesmen were present from various sections of the country, as well as representatives from several of the company's branch houses. The meeting closed with a banquet given by the company at the Courtland Hotel on the evening of January 3. At the beginning of the banquet Ed. A. Langenbach, president of the company, was presented with a mahogany hall clock. A programme of speech making followed the banquet. The Berger Company has just increased its capital stock from \$1,500,000 to \$2,000,000, more capital being needed because of the growth of the company's business.

The Gautemalan Railroad, a new transcontinental line, running from Puerto Barrios on the Atlantic side to San Jose on the Pacific side of Gautemala, has been completed and its opening to traffic will be celebrated within a few days. It is 270 miles long. Construction was begun 25 years ago, but lagged until 1903, when American enterprise and capital took charge and pushed the work through.

The Inland Steel Company's New Furnace.

On July 28, 1907, the first lake cargo of iron ore to enter the State of Indiana was received at the docks of the Inland Steel Company's new blast furnace. This, the Madeline, is situated on the east shore of Lake Michigan at Indiana Harbor, about midway between the South Works and the new Gary plant of the Steel Corporation. A little more than a month later, on August 31, the furnace was blown in, thus achieving for the Inland Steel Company the distinction of having put into operation the first of a group of furnaces that will soon give Indiana important rank as a steel producing State. Previous to the installation of the furnace, the company had purchased its steel making iron from outside sources, but it is now a producer from ore to the finished product. Both in design and construction this furnace plant embodies and represents the best ideas in modern ore

and limestone to be unloaded into bins and stock piles from cars on the trestle; electric power equipment with its complement of boilers, engines and generators of ample capacity to furnish power to the steel mill in addition to supplying the blast furnace; the provision of water storage capacity for two or more furnaces and a possible steel plant, and all tracks and buildings to be laid out with a view to future extensions. A well protected harbor 300 feet wide, a good dock 1000 ft. long for receiving raw material and an abundant supply of pure lake water, for cooling and other purposes, made the site one of great economic advantage. The harbor and dock alongside of the plant were constructed several years ago, but the channel, having an average depth of only 17 ft., it was necessary to dredge it to a depth of 22 ft., to accommodate the largest lake vessels. New



Plan of the Inland Steel Company's Works at Indiana Harbor, Ind.

reducing practice, suitably adapted to meet the requirements of local conditions.

As is usual when extensive improvements not included in the original layout are to be made, the construction of this plant involved problems of co-ordinate operations of the furnace and steel mills that required special consideration and treatment. For instance, as the plan of the works indicates, the furnace is separated from the steel mills by the tracks of the Lake Shore & Michigan Southern, Baltimore & Ohio and Chicago, Lake Shore & Eastern railroads. To transport hot metal from the blast furnace to the open hearth plant a concrete subway and tunnel under the tracks was planned and is now under construction. Through this hot metal in truck ladles will be speedily transferred to the open hearth furnace beyond the tracks, or to the pig machine, at the casting house east of the tracks, as desired. In the meantime the tracks of the Indian Harbor Railroad, which pass at the south of the furnace property, are being used. Other conditions to be met in the general design of the plant required the furnace filling and distribution to be as far as possible automatic; coke

features have been introduced in the construction of the ore bridges, whereby ore is taken direct from boats to storage piles, or, when required, direct to the bins, thus saving much rehandling. Particular mention of this equipment will be made later.

The yard level near the furnace was established at 15 ft. above lake level. As the natural profile of the ground here averaged only 2 ft. above, a large amount of filling was necessary. This was accomplished by a sand sucker, which deposited the soil obtained in deepening the harbor on one side, and by dumping from cars on land. Only enough filling was placed to establish tracks and yardways at the proper level to start the furnace; the remainder of the filling will afford a convenient disposition of the slag from the furnace.

The Blast Furnace.

The stack is of 400 tons capacity, 85 ft. high, with bosh and hearth diameters of 20 ft. 6 in. and 13 ft. 6 in., respectively. The hearth jacket, 20 ft. 6 in. in diameter, is built up of 1½-in. plates and is 9 ft. 6 in. high. For cooling the hearth, 1½-in. pipes, each 9 ft. 6 in. long, are

used and spaced 12 in. apart around the inside of the jacket. Feed pipes of $\frac{3}{4}$ -in. diameter were placed within the $1\frac{1}{2}$ -in. pipes and supply water to the bottom of the latter. The water overflows from the top of the larger pipes and flows down the outside of the jacket wall into the well. Cast iron cooling plates, 9 ft. 6 in. long, are used on the iron and cinder notches.

A unique feature of this furnace is that it is supported by six cast iron columns, making the distribution of its twelve 6-in. tuyeres uniform, and much more satisfactory than when eight columns are used, as has been the practice in furnaces of this size. The bosh is built up with Smeeth cooling plates and is reinforced with 12 cast steel buckstays and seven rows of 1-in. bosh bands, one 8-in., one 10-in. and five 12-in. wide.

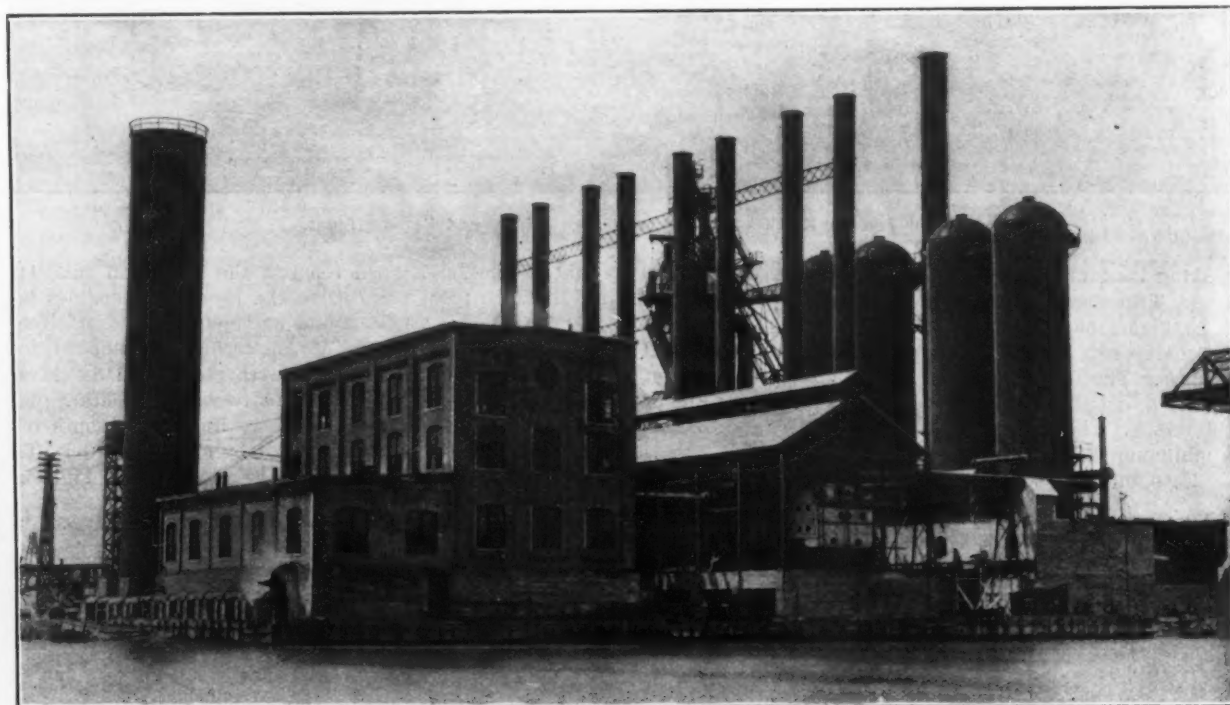
The stock is delivered to the McKee distributor from the stock house by a double track skip bridge, which has a pin connection with the furnace platform. The large and small bells are controlled through bell beams by 14-in. and 10-in. steam cylinders, respectively. These are operated from the cage at the base of the skip bridge. Ample room was allowed on the platform to provide for

The Hot Blast Stoves.

The furnace is equipped with four stoves of the Kennedy center combustion type. Each stove is 22 ft. in diameter and 93 ft. high. They discharge to a self-supporting steel stack through brick lined flues laid in the foundation 11 ft. below the base of the stoves, and are arranged to offset the center line of the furnace 16 ft., thereby permitting a straight lead of the hot blast pipe to the furnace. The two down comers, each 5 ft. 9 in. inside diameter, connect with a dust catcher 20 ft. in diameter. Directly connected to the dust catcher is a Mullen gas washer, from which two leads from the opposite side of the washer convey gas to the boilers and stoves. The gas main to the stoves is also provided with a 12-in. connection, which leads to the ladle drying house. The stove foundations were brought up to the level of the cast house floor in order to assure ready access from one to the other. This level is 17 ft. above the general yard level.

The Power Plant.

The boiler plant, situated directly back of the furnace, comprises eight 500-hp. Stirling boilers, with independ-



The Inland Steel Company's New Furnace Plant as Seen from the Water Side, Looking West.

dismantling the top parts, if necessary; a jib crane handles these parts to the slag pouring track at the base of the cast house. The skip cars on the bridge are operated by a 14 x 14 in. Otis double drum hoist engine, which is located in a small brick engine house at the bottom of the bridge.

The Stock House Equipment.

The steel stock bins are of a simple and inexpensive type that has been found satisfactory after years of service in a number of plants. The coke bin, 60 ft. long, has two doors, one feeding directly into each skip car, and operated through a system of levers from the operator's cage nearby. The bin system served by the ore bridge is covered by a three-track steel trestle, 211 ft. long, connected with the outside railroad system and with a spur running the entire length of the stock yard. Six limestone and ore bins, 91 ft. 9 in. long, covered by two of the trestle tracks, deliver material to the electrically operated scale car of 10 tons capacity. The ore bins are filled either directly from the stock pile by the bridges from the track system, or by a 30-ton transfer car operated along 568 ft. of trestle. The cast house is 108 ft. long, with an addition 104 ft. long, used for clay mixing and ladle drying purposes. The cast house, which will accommodate 10 iron ladles, is spanned by a Case crane of 25 tons main hoist capacity and a 5-ton auxiliary.

ent stacks. Three Epping-Carpenter duplex pressure pumps, 14 x 8 x 16 in., supply these boilers with water, first passing it through two Cochran feed water heaters of 250 hp. Service water is supplied by two Epping-Carpenter compound duplex outside packed plunger pumps of 4,000,000 gal. capacity each. These pumps are provided with two discharge lines, one leading directly to the furnace and the other to the standpipe. The latter main is also by-passed around the standpipe, which has a diameter of 20 ft. and is 125 ft. high.

The blowing engine plant comprises two pairs of 44 and 84 by 60 in. and 84 and 84 by 60 in. vertical, disconnected, long crosshead engines, built by the Allis-Chalmers Company. These engines are designed to run either single or in compound condensing pairs. The steam may pass through a reducing valve when the low pressure side is run singly. A 25-ton Case crane commands the blowing engine house. The condensing plant comprises one Helander barometric condenser, and 10 x 22 x 20 in. air pump, and a centrifugal steam driven circulating pump of 4,000,000 gal. capacity.

The power plant is equipped with three 20 and 42 x 42 in. horizontal cross compound condensing Corliss engines, directly connected to 550-kw. direct current generators. The Allis-Chalmers Company furnished both engines and generators. Power is transmitted from the

power house to a distributing station at the steel mills, a distance of about 1200 ft., by conducting cables on steel towers to the property line of the blast furnace plant, and from this point by underground conduits beneath the intervening railroad tracks.

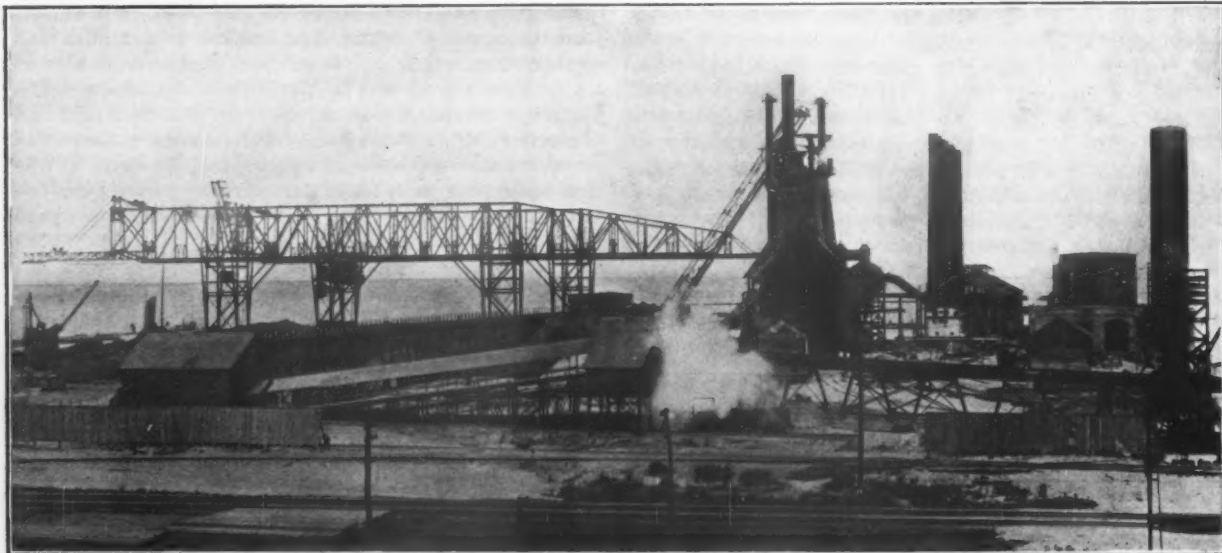
The Ore Docks and Bridges.

The ore yard parallels the harbor and is 756 ft. long. It will accommodate 400 tons of ore to the running foot,

lever covers the bins, and a boom connected to the opposite end of the bridge covers the ore boats. Two Hulett "whirlies," with 2½-ton grabs, were used during the summer to facilitate the unloading of ore from vessels before the bridges were completed.

Other Equipment.

For switching purposes two standard gauge American locomotives of special low design are employed on ac-



View Looking Northeast, Showing the Ore Bridges and Furnace Plant.

making its total storage capacity approximately 300,000 tons. Two shear leg concrete foundations, 8 ft. wide by 9 ft. high, and spaced 180 ft. apart, traverse the yard and carry two Hoover & Mason combined unloaders and bridges. The front shear leg is 80 ft. from the face of the dock and the back leg 100 ft. from the center line of the trestle. The bridges rest on turntable trucks to allow a minimum skew of 17 degrees.

Each machine is provided with the latest design of

count of the small head room in the hot metal tunnel; the distance from the rail to the top of the engines is only 9 ft. 6 in. Eight 20-ton hot metal cars of McKee design were built by the M. H. Treadwell Company to convey the iron to the open hearth plant. On Sundays the metal will be run through a two-strand Uhling pig machine located along the property line to the south of the furnace. The slag is handled by six standard P. T. Berg cinder cars manufactured by the Wm. B. Pollock



A Nearer View of the Furnace, Stoves and Power House, Looking North.

Hoover & Mason 6-ton grab bucket. This is controlled from a traveling trolley in which the operator rides. Appliances which enable the operator to twist the grab at right angles to the line of travel are a feature of the trolley. Motors are provided of sufficient capacity to enable the machine to operate continuously with a vertical speed of the grab of 200 ft. per minute and a trolley traverse speed of 800 ft. per minute. A canti-

Company, Youngstown, Ohio. These cars are dumped by steam or air power, cylinders for this purpose being mounted on each car. A Browning Engineering Company's 20-ton locomotive crane of special design was used to great advantage during all stages of construction.

The plant was designed and its erection superintended by Arthur G. McKee, engineer, Cleveland. The steel

work was fabricated and erected by the following: Plate work for stoves, stand pipe, mains, &c., by the Wm. B. Pollock Company, Youngstown, Ohio; trestle and bins by the Hansell & Elcock Company, Chicago, and ore bridges by Hoover & Mason Company, Chicago. The dredging and pile driving and erection of the intake cribs was done by the Great Lakes Dredge & Dock Company.

Wage Scales in Navy Yards.

WASHINGTON, D. C., January 14, 1908.—The Secretary of the Navy has officially adopted new wage scales for all the principal navy yards and naval stations. These scales are based upon the rates prevailing in the respective "zones of influence" surrounding each of the Government establishments. As the adoption of these scales by the Navy Department will have an important effect upon the labor market, manufacturers in the metal trades will be interested in the details of the official schedules. The Department has therefore prepared expressly for *The Iron Age* a table showing the rates of pay of first-class metal workers in 26 different branches of the trade at the Boston, Brooklyn, League Island and Mare Island yards.

In fixing the scales adopted by the Department a general order was issued by the Secretary of the Navy convening a special board at each navy yard or naval station, with instructions to investigate the rates of pay in private establishments in the vicinity of the yard or station, and to recommend a wage scale conforming as nearly as possible to the average rates of pay. The reports of these boards were received several weeks ago, and have since been carefully analyzed, and, after some slight amendment, adopted and promulgated for the guidance of the commandants of the several Government establishments. Following is the table prepared for *The Iron Age*:

First-class Rates of Pay of Metal Workers at Navy Yards.

	Boston.	Brooklyn.	League Island.	Mare Island.
Blacksmiths	\$3.36	\$3.76	\$3.52	\$4.24
Blacksmiths, machine....	...	3.76	3.52	4.24
Boilermakers	3.36	3.68	3.44	4.24
Buffers and polishers....	...	2.64	2.72	3.52
Coppersmiths	3.52	4.00	3.52	4.24
Coremakers	3.04	3.20	3.04	...
Drillers	2.64	2.56	2.48	3.20
Electroplaters	3.60	4.00	3.20	4.00
Engine tenders	3.12	4.00	3.20	4.24
Finishers, brass.....	3.20	2.88	3.28	4.00
Finishers, iron.....	3.12	2.88	3.28	...
Firemen	2.80	2.48	2.32	3.28
Forgers, heavy.....	4.64	4.96	3.52	4.88
Galvanizers	2.88	2.56	3.04	3.28
Galvanized iron workers..	...	4.56	...	...
Machinists, all round....	3.52	3.76	3.52	4.16
Machinists, electrical....	3.36	4.24	3.60	4.32
Molders	3.52	3.68	3.28	4.16
Patternmakers	3.76	4.24	3.52	4.80
Pipe fitters.....	3.60	3.52	3.20	4.16
Punchers and shearers....	2.64	3.04	2.48	3.20
Riveters	2.88	3.28	3.04	3.92
Toolmakers	3.12	4.00	3.52	4.32
Tool sharpeners.....	3.12	3.04	...	4.00
Wire workers.....	3.04	3.28	3.04	...
Wiremen	3.28	4.00	2.80	4.00

The significant features of the above table are the relatively high rates of wages prevailing on the Pacific Coast, as shown in the figures for the Mare Island yard, and the moderate schedule in force in the vicinity of Philadelphia, as shown by the League Island scale. In a few cases where there is a marked disparity between the wages in these and other yards a partial explanation is to be found in special conditions of employment or in the character of the work to be performed; but, generally speaking, the scales may be relied upon as an accurate index of the labor market in the neighborhood of the four yards mentioned.

W. L. C.

The Rensselaer Polytechnic Institute, Troy, N. Y., the famous school of civil engineering, announces that it has inaugurated courses in mechanical engineering and in electrical engineering. The gift of Mrs. Russell Sage of \$1,000,000 has insured mechanical and electrical laboratories.

The Philadelphia Foundrymen's Association.

The seventeenth annual meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club in that city on the evening of January 8, having been postponed from the regular first Wednesday of the month owing to that day being a holiday. President Thomas Devlin called the meeting to order at the usual hour.

After the receipt of the annual reports of the officers of the association, routine business was transacted. The Tropenas Steel Company, New Castle, Del., represented by Arthur Simonson, vice-president and general manager, was elected an active member of the association. The Short Weight Committee, through its secretary, announced that plans had been made by the New England committee for a conference between the committees and representatives of transportation interests and of iron, coal and coke producing concerns, to meet at the Bellevue-Stratford Hotel, February 5, at 10 a.m. It was decided to increase the local committee to seven, and the chairman made the following additional appointments: Stanley G. Flagg, Jr., of Stanley G. Flagg & Co.; Thomas Eynon, Eynon-Evans Mfg. Company; Walter Wood, R. D. Wood & Co., and W. S. Hallowell, Harrison Safety Boiler Works.

It was also decided to extend an invitation to the New England and the Pittsburgh foundrymen's associations to attend the next meeting of the local association on February 5, when a dinner will be given in their honor. The following committee was announced by President Devlin to make the necessary arrangements: Chairman, J. H. Sheeler, Howard Evans, Thomas Eynon, A. A. Miller, Josiah Thompson, H. L. Tripple, Arthur Simonson, H. L. Haldeman, Frank Krug, Thomas Devlin and W. H. Ridgway.

The annual election of officers resulted in the unanimous choice of the following to serve for the ensuing year:

President, Thomas Devlin, Thomas Devlin Mfg. Company, Philadelphia; vice-president, A. E. Outerbridge, Jr., Wm. Sellers & Co., Inc., Philadelphia; treasurer, Josiah Thompson, Josiah Thompson & Co., Philadelphia; secretary, Howard Evans, J. W. Paxson Company, Philadelphia. Executive Committee: E. E. Brown, E. E. Brown & Co., Philadelphia; Thomas M. Eynon, Eynon-Evans Mfg. Company, Philadelphia; H. L. Haldeman, Pulaski Iron Company, Philadelphia; George C. Davis, 39 South Tenth street, Philadelphia; James S. Stirling, Hilles & Jones Company, Wilmington, Del. Trustees: Thomas Devlin, Josiah Thompson and Howard Evans. Official chemist, George C. Davis.

The paper for the evening's discussion was on "The Dire Cost of and Best Remedy for Carelessness in the Foundry, Shop, Transportation and Traveling," by Thomas D. West. Mr. West's paper was printed in full in *The Iron Age* of January 9. It suggests means of overcoming accidents through the carelessness of employees, for which employers are liable, as is now the case under the Casey act, passed at the last session of the Pennsylvania Legislature. Thomas Eynon, Thomas Devlin, Howard Evans and others participated in the discussion of the paper, the general tenor being that careful shop systems must be devised and men trained more carefully and specifically in the various branches of work to bring the possibility of accidents to a minimum if the law is to be complied with. However, manufacturers will have to add to their expense enough to cover any possible liability, but just what would be a proper proportion in this case could only be determined by close and long observation. At the close of the discussion Mr. West was tendered a unanimous vote of thanks, after which the meeting adjourned.

The P. H. Standish Chain & Mfg. Company, Cleveland, Ohio, has been incorporated with a capitalization of \$100,000 by P. H. Standish, Edward Lindmueller, Wallace N. Appleton, John R. Carey, Samuel Hinds, George Hardy and R. L. Harding. The company has not yet decided upon definite plans, but it may erect a plant for the manufacture of chain under new processes for which it controls patents.

The Illinois Steel Company's New Plate Mill.

The First Electrically Driven Reversing Universal Plate Mill.

Two features of special interest and importance characterize the new universal 30-in. plate mill recently installed in the South Works of the Illinois Steel Company at South Chicago, Ill. It is the first application in the United States of motor drive to a reversing mill, and the units are the largest that have ever been used. This mill, which is a two-high reversible type, is driven by two direct current reversing electric motors. The method of driving is known as the Ward Leonard-Ilgner system. The Ward Leonard control has been well known in this country for years, although it has not come into general use. It consists in reversing the direction of a direct current motor by reversing the direction of the current in its armature, the field excitation being constant. The reversal of the current is accomplished by reversing the field of the generator supplying current to the motor. The first application of this principle to rolling mill work was made by Carl Ilgner of Germany, whose contribution to the system consisted in devising means for varying the speed of a motor, to cause a flywheel to absorb and give up its stored energy, as required.

The specifications upon which the motors were built were written after a long series of experiments on the torque required to roll plates and slabs of varying widths and temperatures under various drafts. These experiments were conducted with continuous indicators on reversing slab mill engines and on plate mill engines. The results were plotted on charts, upon which also were plotted the speed variations required of the motors, to accomplish the cycle of rolling decided upon. From these charts were obtained the horsepower variations and, therefore, the sizes of the motors. This work constituted a very interesting line of research, the correctness of which has been proved by the results of the mill in operation, and will be referred to at greater length later.

The mill is situated at the west side of the plant, immediately north of the Eighty-eighth street gate, in a convenient location to receive the slabbing mill product from which the plates are rolled. At the north end of the mill, as shown in the general plan, Fig. 2, are two parallel standard gauge tracks with room for 14 cars, and these are covered by two Whiting 10-ton cranes, of 80 ft. span, which are used in loading the material to be shipped. The main building, from the roll tables to the end of the shipping room, is 616 ft. long and 83 ft. wide.

A general plan of the rolls and the driving unit complete is shown in Fig. 7. The driving unit consists of a direct current, direct connected motor, which derives its power from an equalizer set. The electrical equipment is located in a well lighted room separated by a wall from the mill room proper and provided with a roof that may be removed in sections; thus protection is afforded against the heat and dust from the mill. A 30-ton overhead traveling crane spans the mill building, and the runways are high enough to allow the crane to pass over the motor room. This crane is of 80-ft. span and is employed for changing rolls and all other work except shipping. By removing a few sections of the motor room roof the various machines can be reached by the crane should its service be required.

This is the first mill in the Chicago District capable of supplying its line of product and for which there has been a considerable demand for some time. It now is, and for the past four months has been, in position to supply plates of all thickness, from $\frac{1}{4}$ to 2 in., in maximum lengths of up to 80 ft. for certain sizes, and widths of from $6\frac{1}{2}$ to $29\frac{1}{2}$ in. The mill was erected under the supervision of Arthur E. Woolsey, superintendent of plate and slabbing mills. The mill proper was designed by the engineers of the Illinois Steel Company and the United Engineering & Foundry Company, Pittsburgh, Pa., which latter built it. The electrical features are the result of the combined work of the engineering department of the company, under the supervision of E. B. Clark, electrical engineer, which prepared the plans, and the West-

inghouse Electric & Mfg. Company, Pittsburgh, which designed and built the special electric apparatus to meet these conditions. This plant has already demonstrated satisfactorily that the most severe conditions of rolling mill work can be accomplished with electric drive. As to what can be done in a rail mill has been shown in the one in operation at these same works and described in *The Iron Age*, November 28, 1907.

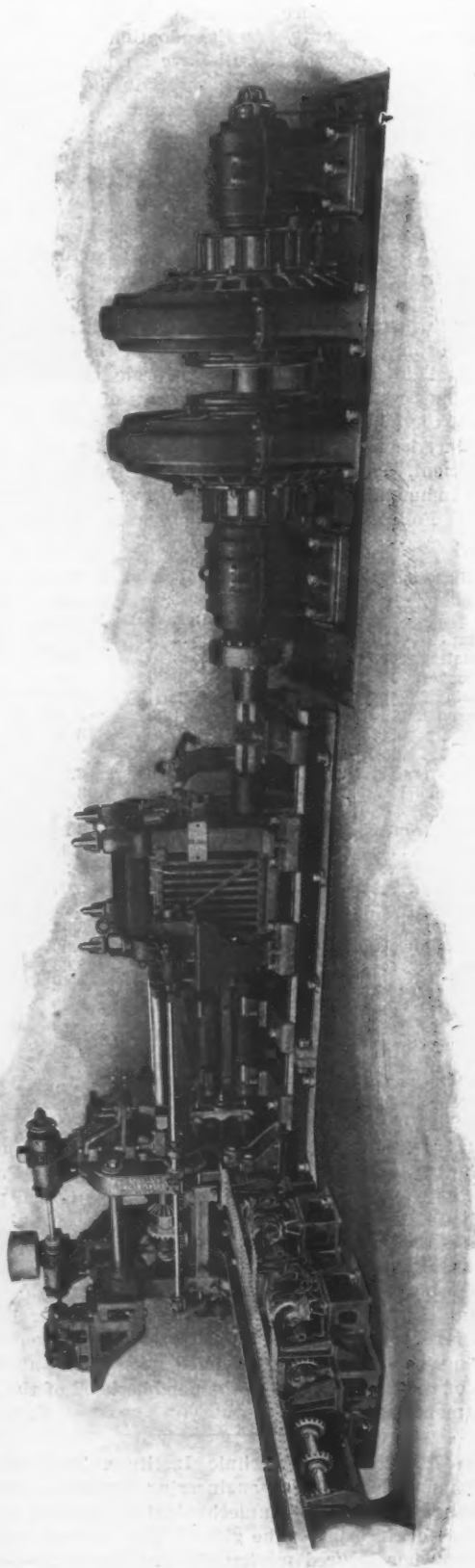


Fig. 1.—The 30-In. Universal Plate Mill and Direct Connected Motor.

Why Electric Drive Was Adopted.

With the foregoing general remarks and before taking up the equipment of the plant more in detail and in logical order, it may be well to explain some of the reasons for applying motor drive to the mill. While there has been some success with gas engines direct connected to mills, they are generally conceded to fall short of the requirements on account of their limited overload capacities. On the other hand, from considerations of starting torque, the electric motor is ideal; for a comparatively short time it will carry extreme overloads in response to the demands upon it. Where steam or gas engines are employed it is necessary to install much larger ones than are required for average work, because of the occasions when it becomes expedient, or even compulsory, to increase the draft or use large stock to secure the desired length of finished material, with no change made in the rolling cycle. A motor can exert a maximum torque of from two to three times its normal full load torque; therefore in selecting a motor commensurate with the strength of the mill, it is not necessary to provide a normal capacity so great as would be required in an engine capable of meeting the same conditions. A gas engine to give same results as a motor would have to be practically twice as large.

A motor can always be designed for direct connection to any type of mill. This is usually not possible where a simple noncondensing twin engine is applied to the drive of a reversible mill; with the overhung crank arrangement a gear reduction is necessary between the engine and the mill driving shaft. Seldom does this gear reduction exceed a ratio of 1 to $1\frac{1}{2}$, and though it reduces the first cost of the engine by permitting higher speeds, the mill is less efficient and the maintenance expense greater than when a direct connected unit is employed. What is, perhaps, most in the favor of electric drive for mills operating continuously is that they are capable of affording economically a speed variation of as high as three to one without the use of change gears or mechanical speed changing devices. The tendency now in the steel industry is to take advantage of the great economies that are possible in utilizing blast furnace gas in developing power through gas engines, and electric drive, as the means of transmitting this power to the mill, is considered to be the best from considerations of economy and the results obtained.

The Furnaces.

The slab storage yard is a continuation of the furnace building, as shown in Fig. 2. It is about 300 ft. long and 80 ft. wide and stores material for both the universal and the old sheared plate mill. The furnaces are at right angles to this yard and to the mill tables. They are two in number, of the continuous type, 40 ft. long and 11 ft. wide, and are capable of taking slabs 10 ft. long and 10 in. thick. They were designed by the company and are believed to embody the features that have been found to be the best in furnaces of similar type, as used throughout the country. Each is capable of heating from 175 to 200 tons in 12 hr., and the mill is equipped to roll up to 300 tons per turn, depending on the class of material being rolled. The slabs are delivered to the furnace on trucks underneath a 15-ton Whiting crane. The latter picks up the slabs and places them upon a transfer table 40 ft. long, which carries them to the mouth of the fur-

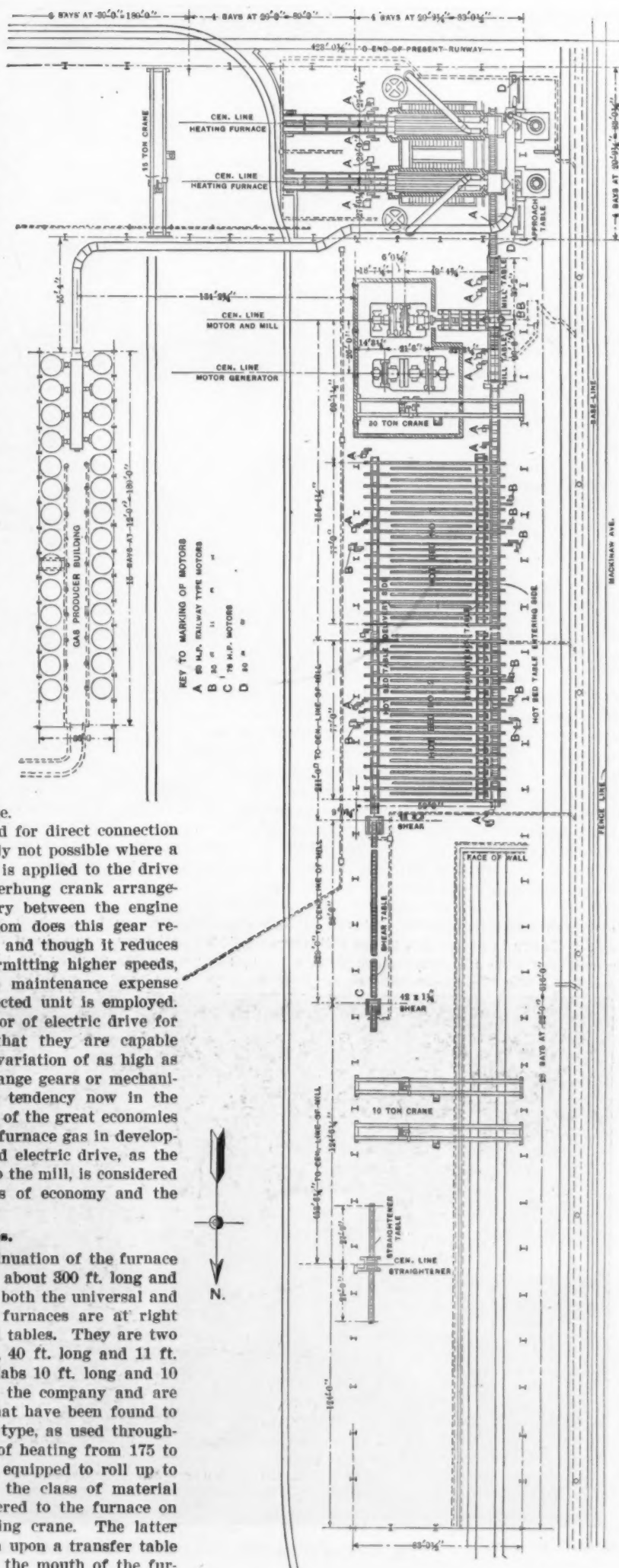


Fig. 2.—General Plan of the New 30-In. Universal Plate Mill of the Illinois Steel Company.



Fig. 3.—View of the Heating Furnaces at the Entering Side, Looking Northwest.

naces, as shown in Fig. 3. The mill is 60 ft. from the north furnace, and quick delivery of the hot steel to the rolls is insured by the expulsion of the slabs from the furnace by means of a pusher over a gravity drop.

Roll Train and Tables.

The roll train and tables are the latest design of the United Engineering & Foundry Company and were specially constructed to permit of rapid roll changes and quick repairs. The design is unique in that the vertical rolls are set much closer to the horizontal rolls than is customary. The vertical rolls can be removed by a straight lift without disturbing the driving shafts, and the arrangement of the gears greatly facilitates repairs. The main rolls are 24 in. in diameter by 67 in. long, with 18-in. necks, and the side rolls are 15 in. in diameter, with 8-in. necks; all are driven from the same set of pinions. The main pinions are 26 in. in pitch diameter, with straight staggered teeth, and the pinions driving the side rolls are in proportion to the roll diameter. The main roll and side roll screws are driven by motors;

these motors are strong enough to release the rolls from a plate under draft, when necessary. A view of the roll train and tables is given in Fig. 4 as they now appear. They are also shown in Fig. 1, which is an engraving from a retouched photograph to show the combination of the mill and motor, which was impossible in a view of the equipment installed on account of the wall separating the two.

Hot Beds and Finishing End.

The plates are delivered from the mill table to a set of tables, Fig. 5, 220 ft. long. Two of these tables, each 5 ft. long, place the plate in front of the straightening presses. The plates are then lifted to the table, which is a plane surface interrupted by slots through which the hot bed chains and straightening dogs pass. The straightening dogs, operated by worms, are then brought up to the plate, straightening it laterally against lugs, which are in a perfectly straight line on the opposite side of the table. After being straightened in this manner the plate is lifted to the chain hot bed;



Fig. 4.—View of the 30-In. Universal Mill as Installed, Looking North.

these hot beds are 80 ft. long and 50 ft. wide. When the plate is sufficiently cool it is lifted from the hot bed by the same chain conveyor to a table which runs the plate into the straightening rolls, where all surface bends are removed. The plate is then pushed on to a laying out bed, where it is marked to proper size, painted and stamped with necessary information. From the bed it is placed on another table leading to the shears, where it is sheared, inspected and piled for shipment.

With the exception of the furnace valves and the slab pusher, which are hydraulically operated, all mechanisms in the mill are motor driven.

The Drive of the Mill.

To revert again to the mill and its electrical drive, it will be interesting to describe briefly the preliminary work done to determine what apparatus would be best suited to the operating requirements of the mill, for it must be remembered that until comparatively recently there was little practical data available to guide the selection. It would have been comparatively easy to decide upon the size of motor necessary to give a maximum torque equivalent to that of a steam engine that would perform the work, but there was no means of knowing what normal capacity the motor should have. The first

case it would have been necessary to install apparatus capable of supplying a maximum demand of 10,000 hp., and the regulation of the power machines would have been so difficult that gas engine driven units could not have been considered.

To make an electrical proposition feasible the power requirements from the central station must be equalized, and the control apparatus for the mill motor must be of simple design, easy to operate and capable of producing the required changes of speed and direction of rotation very rapidly. The great transmission advantages afforded by high voltage alternating current are in general sufficient to warrant a selection of this class of station machines.

The power requirements for reversing mill work have received a great deal of attention during the last few years. Continuous indicator diagrams were taken from reversing engines and speed variations were noted. The moment of inertia of the system, and therefore its kinetic energy at any given speed was calculated; and the power required for acceleration determined. From the data thus obtained a torque curve was plotted, giving the torque actually required at the roll surface for the various passes, or in other words, for a given reduction of section,



Fig. 5.—View of the Hot Bed Tables, Looking North.

experiments were made on a nonreversing mill, and by carefully indicating the engine, taking observations of the flywheel speed, the nature of the material worked and the dimensions of the sectional area affected, the average horsepower required for the reduction of a given weight of material was determined. Using this data as a basis the power required by a nonreversing mill for any desired condition of rolling could be closely approximated. The application of motors to this class of service does not offer any very serious problems, for by supplying considerable flywheel effect in the system and providing a motor with a drooping speed characteristic the heavy and rapidly fluctuating loads can be equalized and the power drawn from the line reduced to a fairly uniform value. The service required of the controller is light, the main function being to start the motor, though in some cases it is necessary to provide automatic means for reducing the speed during the heavy loads.

The heavy reversing mill, however, presents a much more complicated problem. The units required are of a very much larger capacity, and the direct application of a flywheel to the roll shaft and the operation of the motor direct from the power station are not practical, owing to the rapid acceleration, retardation and reversing necessary in this class of service. In this particular

making liberal allowance for friction. Certain corrections are made in using this data, as the power required during the latter part of the cycle for a given reduction increases on account of the diminished temperature of the material; but the reduction in the last few passes is small, and, as shown in the load curve hereafter referred to, the minimum and maximum power required for this portion of the cycle is not very large as compared to the load during the breaking down period; and consequently the average horsepower required will not be greatly affected by the finishing temperature conditions.

An analysis of the requirements for the driving unit in reversing mill work is best shown in the form of speed, torque and horsepower curves. It is necessary to decide on the number of passes in which a given reduction of section is to be effected, and this naturally depends on the power available and the amount of work it is desired to put into the finished product. Certain assumptions have to be made regarding the methods of rolling, and generally these are: That the acceleration from zero to full speed takes place in a certain time, varying from 2 to 5 sec.; that the material enters the rolls when they are at approximately half speed; that current is shut off from the motor and the rolling continued by the kinetic energy of the moving parts, so that the material leaves the rolls at half speed; and an interval of time is se-

lected for handling the material between passes which varies from 2 to 3 sec. A practical rolling speed is selected, and, having settled the above matters, a speed curve is constructed. The field data of power requirements that have been obtained are generally figured to give the foot-pounds torque at the roll surface to give a certain reduction section, and with the number of passes decided with a change of section per pass, the required torque curve is next plotted. From these two curves a horsepower curve can easily be calculated.

Fig. 6 gives the requirements for the 30-in. plate mill in the form of these three curves, A representing the speed curve, B the torque curve and C the horsepower curve. The data upon which these curves were based were obtained from steam engine driven units, and the time periods were carefully checked from actual operat-

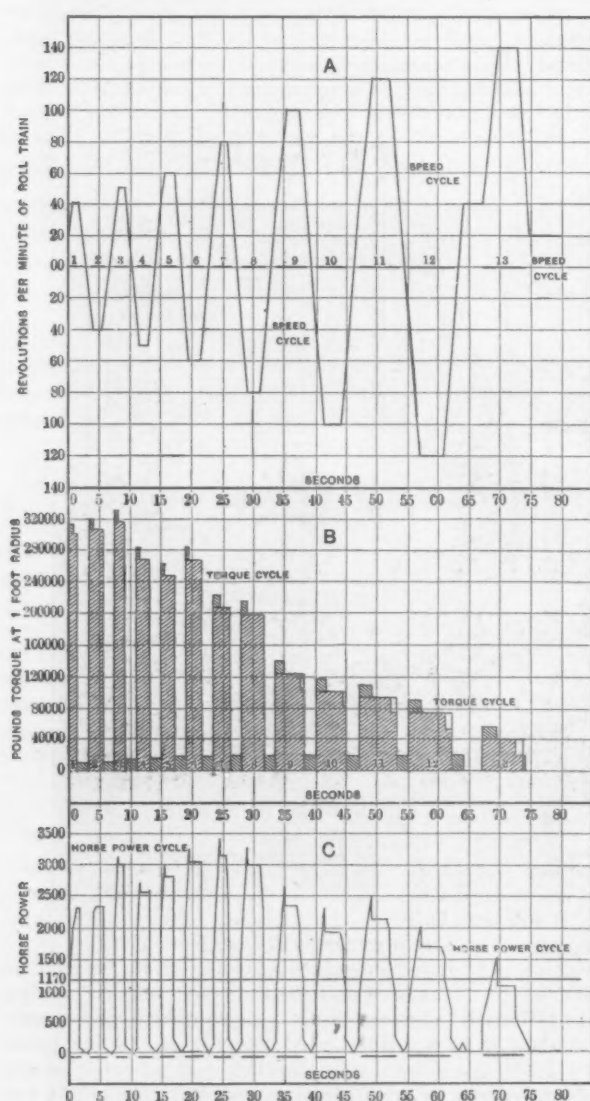


Fig. 6.—Charts of the Speed, Torque and Horsepower Cycles for 13 Passes Through the Mill.

ing observation. It is to be noticed that the speed increases throughout the cycle, while the torque decreases, with the result that the power required during the various passes is fairly uniform. The speed of the mill motor is varied from zero to 150 rev. per min. in one direction, and from this speed to 150 rev. in the opposite direction. The acceleration is at the rate of 100 rev. per min. per second, or a full reversal from the maximum speed in one direction to any speed in the opposite direction is made in 3 sec. As noted above, however, such conditions of operation are not required in actual practice.

The number of passes required to roll the average plate is 13 and the time for one cycle is 75 sec. This is divided into a working period of 48 sec., and a total interval of rest equal to 27 sec., with an approximate period

of 2 sec. between passes. The horsepower required varies from zero to 3400, which gives an average for the cycle of 1170 hp.

In the case of the 30-in. mill equipment the various problems as shown by these specification curves have been solved by supplying a direct current shunt wound motor for driving the mill and using an equalizer, in the form of a flywheel type motor generator set, located electrically between the mill motor and the central station, which supplies high voltage alternating current power. The equalizer set operates continuously with relatively slight variation in speed. The field of the mill motor is permanent, while that of the shunt wound motor is variable. With zero current in the generator field the electromotive force of the armature circuit is zero, and no current is supplied to the mill motor, the armature of which is connected permanently by heavy leads to the armature of the generator. Current is applied to the generator fields first through very high resistance, and, as this is cut out, the field is strengthened and the generator voltage is increased accordingly. The motor speed follows the variation directly and the amount of current which it takes will be governed by the torque required to perform the work. The reversing of the mill motor is accomplished by reversing the current in the generator field circuit, which changes the direction of flow of current in the armature circuit of both the generator and motor. Thus the full control of the mill motor is obtained by means of a field rheostat, which governs a current of less than 150 amp.

The function of the flywheel is to convert this varying load into a uniform constant load; consequently the required capacity of the alternating current motor of the equalizer set (and the power taken from the line) is designated by the average load condition. The three factors to be considered in figuring flywheel capacity are the amount of energy required from the flywheel, which is usually figured in horsepower-seconds; the percentage drop in speed allowed, and the time available for storing up energy in the wheel. By referring to the horsepower curve, Fig. 6, the amount of energy to be given out by the flywheel is that shown above the average line and the storing up periods (or periods of rest) are equal to the delivering periods (or periods of work). The drop in speed of the motor generator set ranges from 10 to 15 per cent. for the heaviest passes; and, in case the loads should be greater than is shown, a further drop in speed is obtained, automatically.

The Equalizer Set.

This set is shown in Fig. 8, and is of the four-bearing type, and consists of an alternating current induction motor, a direct current generator and a flywheel located between these machines. The revolving elements are mounted on a common shaft, and the four bearings and the machine frames are arranged on a common bedplate. In Fig. 7 the alternating current motor is designated by a, the flywheel bed plate by b and the direct current motor by c. The alternating current motor has a continuous load rating of 1300 hp., and will develop a maximum torque three times full load torque. It is of the "HF" type, with a wound secondary, and is 25-cycle, 2200-volt, 8-pole, with a synchronous speed of 375 rev. per min. No transformers are used, as the voltage of the motor primary is the same as that of the feeder circuit.

For reasons of manufacture and to keep the diameter as small as possible, the flywheel is composed of two units, one of which is shown in Fig. 9. Even with this arrangement, however, the peripheral speed, which is 250 ft. per second, is hardly within a safe limit for a cast steel wheel and a laminated type was provided. The total weight is 200,000 lb., the diameter is 13 ft. 2 in., the radius of gyration is 5 ft. 2½ in., and the flywheel effect is 2,600,000 lb. at 1-ft. radius. The wheel consists of a sheet steel rim and a cast steel spider with double spokes of comparatively small sections. This construction makes the wheel more elastic than it would be with single spokes of equal strength. The frame of the spider is machined with dovetail slots, and the thin steel sheets are punched in segments with tongues to fit the spider rim slots. These segments are assembled with over-

lapping joints, and on the outside are placed heavy one-piece steel end rings, which are clamped to the laminations by through bolts. Very little strain comes on these bolts, as the thin sheet construction gives a very high slipping resistance with a comparatively light pressure. An idea of the energy stored in this wheel and the efficiency of the motor generator set is afforded in the facts that it requires 1200 kw. for a period of 5 min. to accelerate it to full speed and the load, running light, is 200 kw.

The direct current generator has a continuous rating of 3000 kw. at 600 volts, 375 rev. per min., and will stand 150 per cent. overload without injurious sparking. The speed and direction of rotation of the mill motor is accomplished by varying and reversing the generator fields, which are separately excited from a 220-volt circuit. To facilitate the rapid reversal of the field magnetism the entire magnetic circuit is built up of laminated steel; and is supplied with interpoles (punched with the field laminations), with additional compensating turns, placed in slots in the face of the main poles. The machine is of the double commutator type, which provides a liberal capacity for the very heavy current required by the mill

The normal speed of the motor is 100 rev. per min. and the higher speeds are obtained by shunt field control. It is to be remarked that thus far the maximum speed desired has been approximately 80 rev. per min., most of the product being of a comparatively heavy gauge. Eventually the efficiency of the mill will gradually be increased and the higher speeds thus available will be the means of greatly increasing the output.

The motor, indicated by *d* in Fig. 7, is connected by a flanged coupling *e* to the driving spindle *f* of the mill, which drives the pinion shaft *g* through loose box couplings or muffs and a short piece of shaft or wobbler. The pinions are mounted in a suitable housing and each pinion shaft is connected through muffs or wobblers, to a horizontal roll. A pinion which meshes into the upper roll pinion drives two horizontal shafts which extend to the outside of the mill housing. These shafts carry the bevel pinions which drive the vertical rolls—two of which are located on each side of the horizontal rolls. The bearing next to the mill is exceptionally large and well reinforced. It is specially designed to withstand the heavy end thrust that occurs when the mill spindle breaks on a

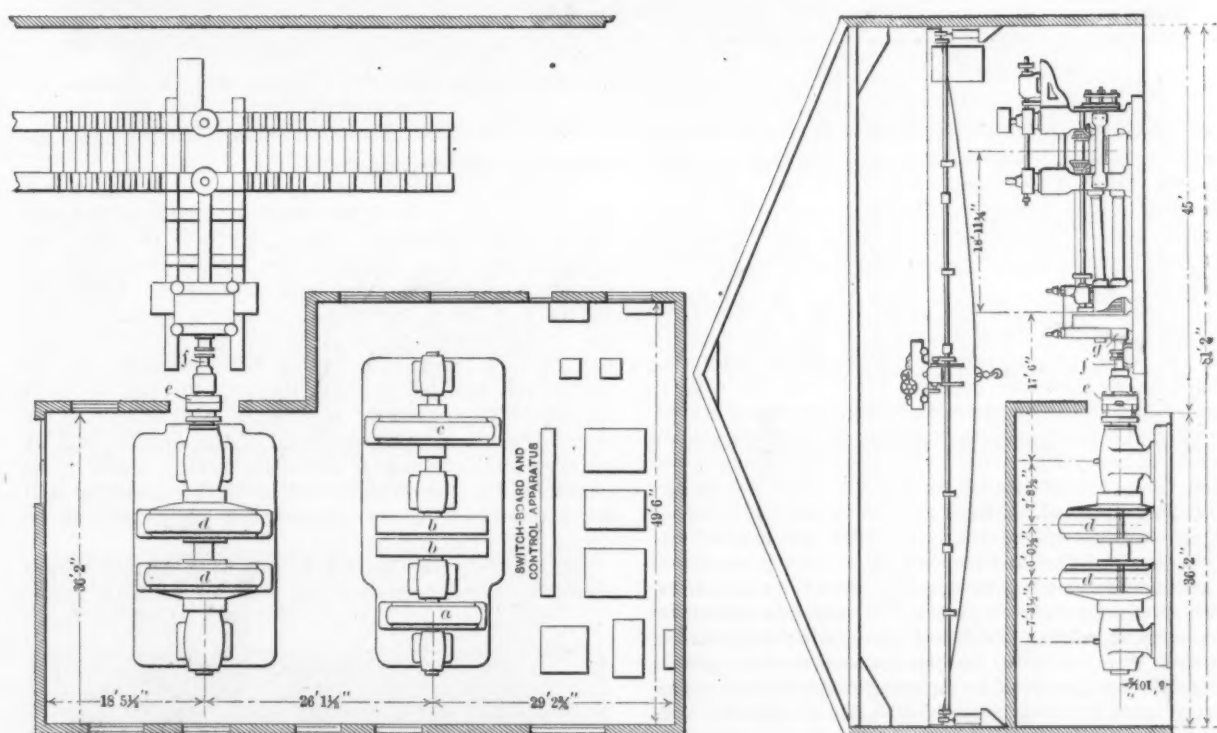


Fig. 7.—Plan and Elevation of the Electrical Equipment for the Mill Drive.

motor, and by permitting the use of a large number of bars the voltage between bars is reduced to a low value.

The shaft of the equalizer set is solid, and the bearings are of the ring oiling type and are supplied from an oiling system. The bottom shells are water jacketed, though the design is very liberal and water cooling is not necessary to insure good operating conditions.

The Mill Motor.

The direct current mill motor will safely carry a continuous load of 4000 hp. at 575 volts, 150 rev. per min., and will stand a maximum of 10,000 hp. momentarily. It is capable of exerting a maximum torque of 135,000 lb. at 1 ft. radius up to a speed of 75 rev. per min. in either direction. As shown in Fig. 10, it consists of two 2000-hp. units, with the armatures mounted on the same shaft and with both motors arranged on a common bedplate, forming a two-bearing set. The principal reason for the subdivision is to reduce the flywheel effect by using armatures of small diameters. The power required for acceleration is thereby reduced which facilitates rapid reversing. The mechanical construction of the field is practically the same as that of the generator, including interpoles and main pole compensating windings, but the armatures have only one commutator each, which are in circuit with the two commutators on the generator of the equalizer set.

diagonal, thereby tending to lengthen itself between bearings. To provide for the ordinary thrust of the mill, a semi-circular Babbitt faced collar is bolted to the outside surface of the mill end bearing. A Babbitt faced collar provided with adjusting bolts is keyed to the ends of the flange couplings next to the bearing and this acts as the shaft wearing collar. It is split so as to be easily replaced or repaired. The connection of the mill and motor is best shown in the illustration before referred to, Fig. 1.

The general conditions for rolling a 10 x 3/4 in. x 65 ft. universal plate from a 6 x 10 in. x 8 ft. slab were as follows: The average alternating current power required was 750 kw., with 15 per cent. variation above and below this amount, and the total peak loads on the direct current machines ranged from 4000 to 5000 amperes. The average time required to roll one plate was 2 min., giving the plate 15 passes.

The Mill Control.

As explained before, the voltage of the direct current generator and consequently the speed of the mill motor is varied from zero to full value in the opposite direction by means of a field rheostat. The type used is shown in Fig. 11, and the resistance is of the cast grid type mounted externally. This rheostat and also a duplicate which governs the maximum speed of the mill motor, are

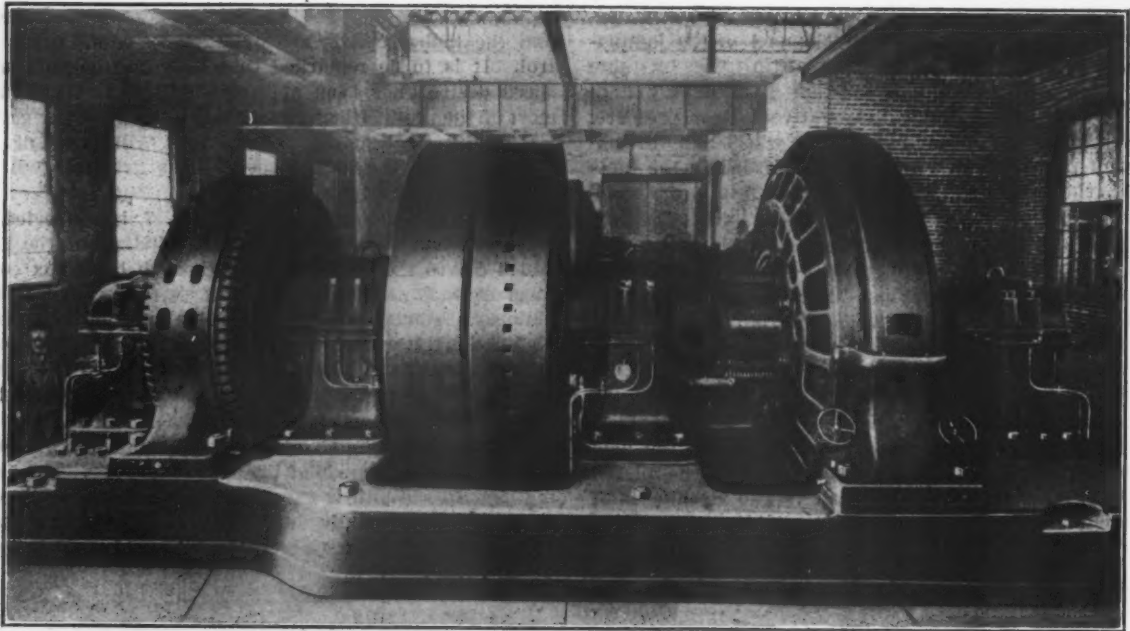


Fig. 8.—The Equalizer Set for Converting the Variable Load on the Mill Into a Uniform Demand on the Power Source.

mounted in the operator's pulpit; and to insure that the motor is always accelerated and reversed with full field, the two rheostats are provided with an interlocking device so that it is necessary to bring the mill motor to its normal speed (100 rev. per min.) before the motor rheostat can be operated to give the speeds ranging from 100 to 150 rev. per min.

The main feature of the control is the automatic slip regulator, which governs the speed of the motor generator. A series of pneumatically operated switches controlled by magnetically operated air valves are used to insert resistance in the secondary circuit of the alternating current motor; and thereby slow it down during the periods of heavy load; and also to cut out resistance, and bring the speed of the set to normal value during the light load interval. The air is supplied by a motor driven compressor, and the current for the magnet circuit of the switches is furnished by a battery connected as a shunt in the compressor motor circuit, so that it receives a charging current when this motor is operating. Two current relays, which act as opening and closing switches, are connected in the magnet control circuit. The relays are governed by current furnished from series transformers in the supply lines to the alternating current motor, and consequently the value of the relay current varies directly as the load on this motor. During the light load period the current relays close the control circuit to the air operated switches and the secondary resistance is cut out. When the alternating current motor load exceeds normal value one of the relays lifts and the switches open in regular order cutting in the secondary resistance gradually and reducing the speed of the motor generator set to such a value that the normal load on this motor plus the power given up by the flywheel equals the power required by the mill motor. In case of a sudden heavy overload both relays lift and full resistance is inserted in the secondary instantly to give a maximum drop in speed. To meet some conditions of operation it is desired to have the first relay act at a motor load somewhat below normal value and for some work to act at a value above normal. This adjustment is accomplished by a compensator in the relay governing circuit.

The equalizer set is started by throwing in the oil switch of the supply lines, and the acceleration is automatic, as explained above.

Safety Devices and Instruments.

A line relay, actuated by current from a small series transformer in the alternating current motor supply line, is connected in the magnet control circuit of the resistance switches, and is held normally closed as long as the motor is taking current. When the alternating current fails this relay is opened, which breaks the switch control circuit, and thereby insures that all the resistance

will be in the secondary circuit when current is again applied to the motor.

To prevent excessive overloads on the direct current generator, either by a too rapid reversing of the mill motor or by supplying a heavy draft to the mill, two overload relays are placed in the circuit connecting the armature of the generator and mill motor. Under the influence of heavy currents these relays operate to open the circuit breaker of the generator and motor field supply line. A centrifugal switch is so arranged on the end of the mill motor shaft that it will open the field circuit of the generator in case of high speed of the motors, due to some derangement of the circuits, such as an accidental opening of the shunt fields. Under these conditions the electro-motive force of the generator will be reduced to zero and consequently no power can be furnished to the mill motor.

On the main switchboard the following instruments are provided: For alternating current—an ammeter, volt-

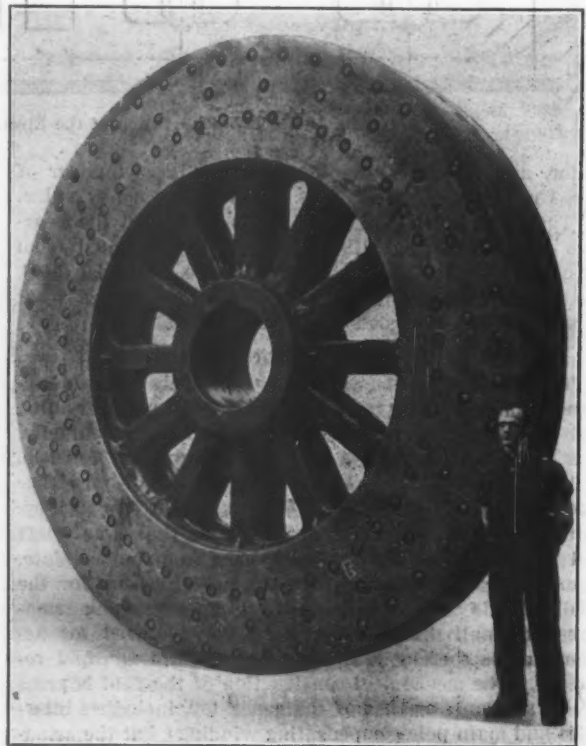


Fig. 9.—One of the Two Units of the Flywheel on the Equalizer Set.

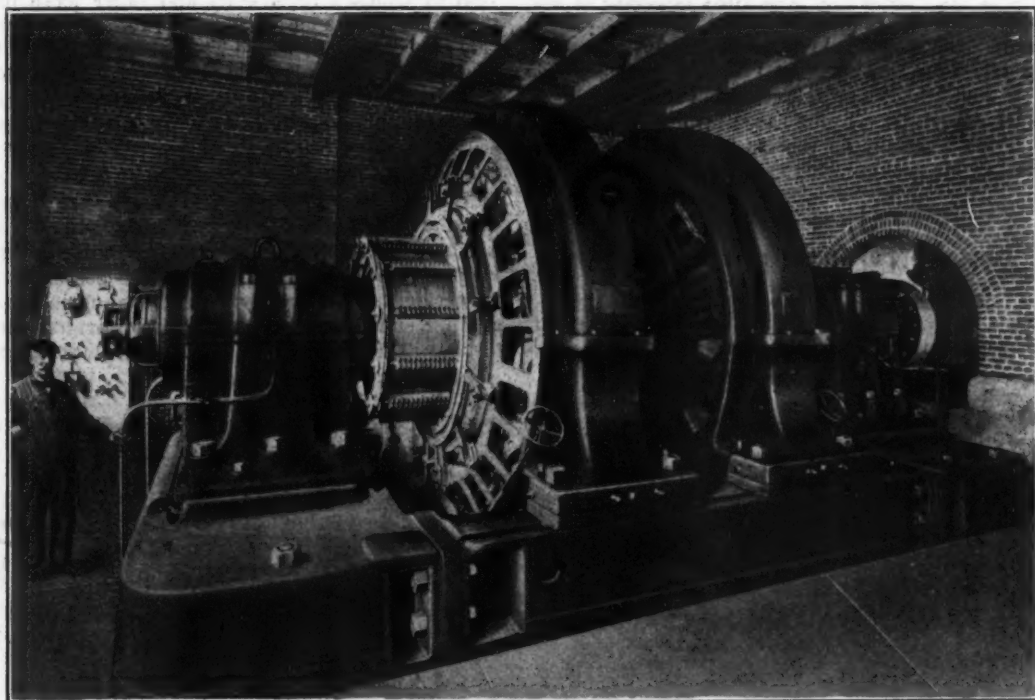


Fig. 10.—The Double Unit 4000-Hp. Mill Motor.

meter, power factor meter, indicating wattmeter and an integrating wattmeter, and for direct current—two ammeters, two voltmeters and a speed indicator, all of the indicating type. The latter instrument is operated by a small magneto-dynamo, which is belted to the mill motor shaft. A panel located in the operator's pulpit contains an alternating current indicating ammeter and a speed indicator for the mill motor similar to the one just described, thus the operator can see at a glance just how hard he is working the mill and at what speed.

The Power Plant.

At the present time the power station of the South

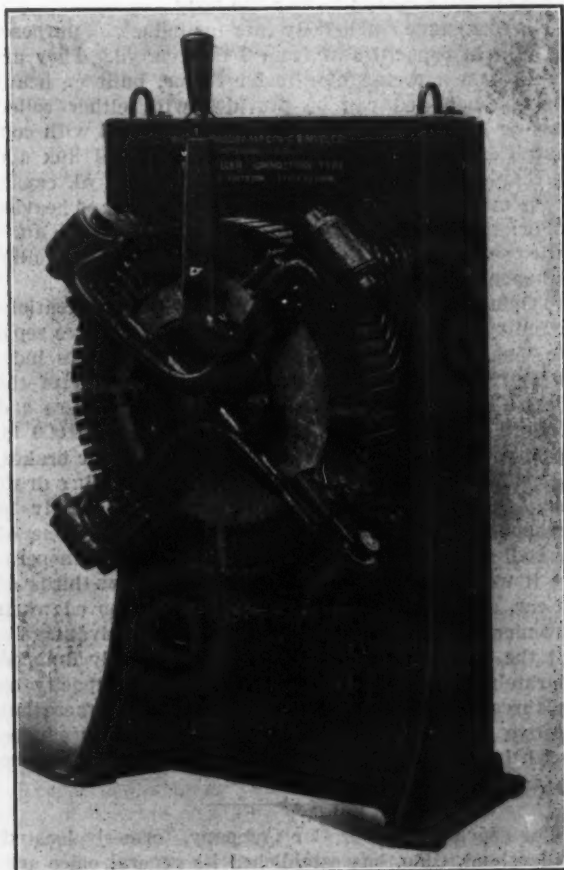


Fig. 11.—The Field Rheostat for the Generator on the Equalizer Set.

Works contains three 2000-kw. generators, direct connected to steam engines and one 2000-kw. generator, direct connected to steam turbines, the output being three-phase alternating current at 2200 volts and 3000 alternations per minute. Additions are being made which will include four 2000-kw. generators, direct connected to gas engines, which will use blast furnace gas.

The New England Foundrymen's Association.

The New England Foundrymen's Association held its annual meeting at the Exchange Club, Boston, on the evening of January 8, with a very large attendance of members and guests. The election of officers and routine business were carried through in the afternoon, with President W. H. Bense in the chair. The report of the secretary showed a membership of 120 firms, and the treasurer reported a balance on hand and all bills paid. The Nominating Committee, consisting of Henry A. Carpenter, B. M. Shaw and George H. Gibby, made its report, recommending a list of officers for the ensuing year, and they were elected unanimously, as follows:

President, Henry F. Arnold, American Tool & Machine Company, Boston; vice-president, William A. Viall, Brown & Sharpe Mfg. Company, Providence, R. I.; treasurer, George H. Lincoln, G. H. Lincoln & Co., Boston; secretary, Fred. F. Stockwell, Barbour-Stockwell Company, Cambridge. Executive Committee: J. L. Anthony, Weir Stove Company, Taunton, Mass.; W. A. Jackson, Walworth Mfg. Company, Boston; William J. Breen, Hugh W. Adams & Son, Boston; Joseph Schilling, Russell & Irwin Mfg. Company, New Britain, Conn.; Arthur L. Goodnow, Goodnow Foundry Company, Fitchburg, Mass.

President Arnold, in taking the chair, made a brief speech of acceptance, after which two former presidents of the association, William H. Bense and Walter B. Snow, both of Boston, who have become engaged in other lines of business, were elected honorary members of the association.

The Committee on Shortages of Pig Iron, Coke and Coal reported that arrangements had been completed for a conference to be held at Bellevue-Stratford Hotel, Philadelphia, on February 5, and assurances had been received that delegates from at least 60 representative concerns and transportation companies would be in attendance. J. L. Anthony, Weir Stove Company; W. J. Breen of H. W. Adams & Son, and Henry A. Carpenter, General Fire Extinguisher Company, were chosen to represent this

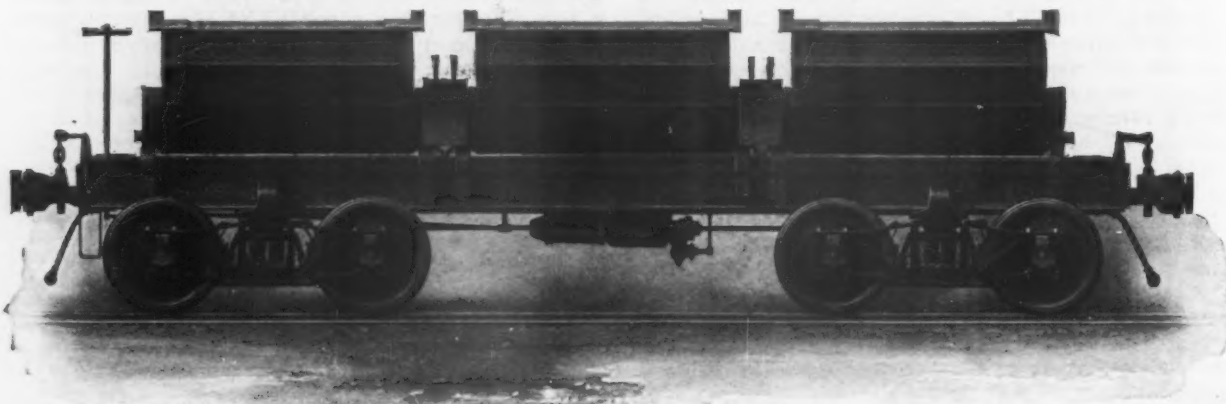
association at the conference. The other members of the association were also urged to attend, if possible.

President Arnold acted as toastmaster for the after dinner exercises in the evening. Among the speakers were E. E. Bartlett, vice-president of the Boston branch of the National Metal Trades' Association, and J. H. Cone, assistant secretary of the National Metal Trades Association. A musical entertainment followed the speaking.

New Koppel Industrial Cars.

A number of new types of cars especially adapted to the requirements of contractors, steam and electric rail-

road of doors, straps, bolts and other loose parts, and the shape is such as to render it exceedingly strong. The side and end plates are riveted together so that any strain on the end plates is transmitted to the side plates, thus eliminating a concentrated strain, and consequently greater wear and tear on one part. The dumping of the body being performed by rolling it over and outward, friction and resistance are reduced. The car can easily be dumped by one man without mechanical assistance, and the return of the body requires practically no effort. A slight push will dump and bring the body back to its loading position. Should one of the bodies be damaged by accident it can easily be removed from the car and another substituted. The cars are provided with a new locking device consisting of a simple latch plate, which



The New Triple Body Car Built by the Arthur Koppel Company, Pittsburgh, Pa.

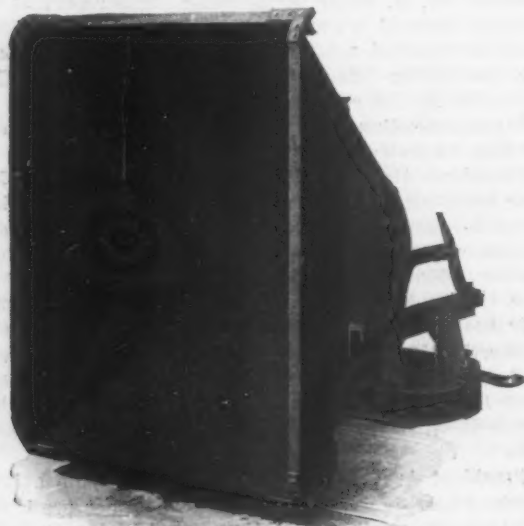
roads, foundries, cement factories, brick yards, mines and quarries and other industries, for transporting coal, scrap, dirt, stones, sand, slack, ashes, &c., have recently been designed by the Arthur Koppel Company, Pittsburgh, Pa. These are built for standard or narrow gauge track, and in capacities of from 2 to 12 cu. yd. The two accompanying illustrations are representative of the line and show double side V-dumping cars built entirely of iron and steel.

The following are among their advantages: The discharge of the load is automatically performed by dumping the

is located on the diagonally opposite corners of the body and insures against accidental discharge. It can only be operated from the side opposite the dump, and automatically locks the body when returned to the load carrying position. These functions are of special value when considering the safety of the workmen, as the operator cannot be injured by the body accidentally dumping to the wrong side, nor can the car be damaged as a result of the operator failing to lock the body.

Narrow gauge single body cars for industrial purposes are built in capacities of from 2 to 4 cu. yd. They are mounted on a rectangular under frame, built of heavy ship channel, and can be provided with either roller, brass or Babbitt bearings. They are provided with continuous drawbars, with special draft gear and link and pin couplers. Standard gauge cars of 4 to 6 yd. capacity are built after the same general design, but of heavier construction, and can be equipped with M. C. B. automatic couplers and spring draft gear. In these cars elliptical springs carry the load to the journal boxes.

Triple body cars similar to one of the illustrations are built for 12 cu. yd. capacity. Each of the three separate V-shaped bodies holds 4 cu. yd. and operates independently—i. e., it has no connection with either of the others. The bodies are mounted on an under frame and standard arch bar trucks suitable for cars of 60,000 lb. capacity. They can be provided with hand or air brakes, and with M. C. B. automatic couplers and spring draft gear. One of the advantages of making the body in three parts is the facility for repairs. Should one of the bodies become damaged so as to render it inoperative it would not interfere with the other two-thirds of the car, and the damaged body could be removed when convenient and another substituted. Another advantage is that the three bodies can be much more easily dumped separately than could one box of the same capacity as the three. Of occasional importance is the fact that selective loading is possible; different materials can be placed in the three compartments and dumped where each may be desired.



A Single Body Car in Dumping Position.

body, and takes place to the side of the rails and not between them; thus the car can be unloaded at any place, and a special installation is not required for unloading, as when a car is built for bottom discharge. The cars can be discharged to either or both sides, but do not have to be unloaded to both sides simultaneously, as do gable bottom cars. The body of each car is one rigid unit, de-

The Cleveland Motor Car Company, formerly located at Cleveland, Ohio, has established its general office and salesroom at 1659 Broadway, New York, and has moved its factory from Cleveland to Milwaukee, Wis.

The Excelsior Alligator Busheling Shear.

A necessity in every scrap yard is a strong, rigid, reliable, simply constructed and well balanced alligator busheling shear. Such a one the Excelsior Tool & Machine Company, East St. Louis, Ill., claims to have in its redesigned and perfected shear herewith illustrated. It is especially adapted for general use on medium weight iron and soft steel, and for busheling boiler plates, pipe and the general run of scrap.

A special feature of the tool is the heavy bed plate with the metal distributed so as to best withstand the shocks and wear to which it is naturally subjected. The shear arm also is provided with an especially heavy bearing on the pivotal shaft; and to keep the shear blades in alignment this shaft has double bearings in the housings, fitted with taper wedges to take up wear. Besides an adjustable drift key and collar to take up the side wear, there is also a rubbing or bearing plate on the main lever on the reverse side of the shear, as shown in the illustration. These adjustments serve to keep the shear blades in alignment.

Another feature of construction is the position of the lower shear blade, which is set with its cutting edge flush with the bedplate, thus allowing a long sheet to be cut without striking the housing. The shear has a faster travel on the up stroke than when cutting on the down stroke if the pulley is driven in the direction indicated by the arrow on the rim. Dirtproof oil collars and oil cups afford protection to all bearings from clippings and dirt, and in this and other respects the shear is designed to meet the exacting requirements of the particular use to which it is adapted with the least exposure to interruption through the hazards of wear and breakage.

The shear has a capacity of $1\frac{1}{4}$ in. square iron or its equivalent, and is provided with shear blades $18\frac{1}{4}$ in. long by 4 in. wide and $1\frac{1}{4}$ in. thick, with four cutting edges to each knife, and an opening between shear blades of 8 in. Two flywheels, $6\frac{1}{2}$ x 44 in., weighing 800 lb. each, serve to supply steadiness of movement under intermittent loads. The crankshaft is of cast steel 4 in. in diameter, and the lever pin is of forged steel $3\frac{1}{2}$ in. in diameter. The shear is designed to run at a speed giving 60 to 75 cuts per minute. It occupies a floor space of 45 x 84 in. and weighs 6000 lb. One pair of reversible shear blades with four cutting edges, and tight and loose pulleys, are furnished with each machine.

The American Steel Foundries to Change Stock.

The American Steel Foundries proposes (in addition to the original plan to pay off the accumulated back dividends in interest bearing scrip and a cash distribution of 3 per cent.) the elimination of the present common and cumulative preferred stock, substituting therefor an issue of \$17,184,000 capital stock. The new stock is to be exchanged for the cumulative preferred in the ratio of 77 for each 100 outstanding, and for the common at the rate of 25 for each 100.

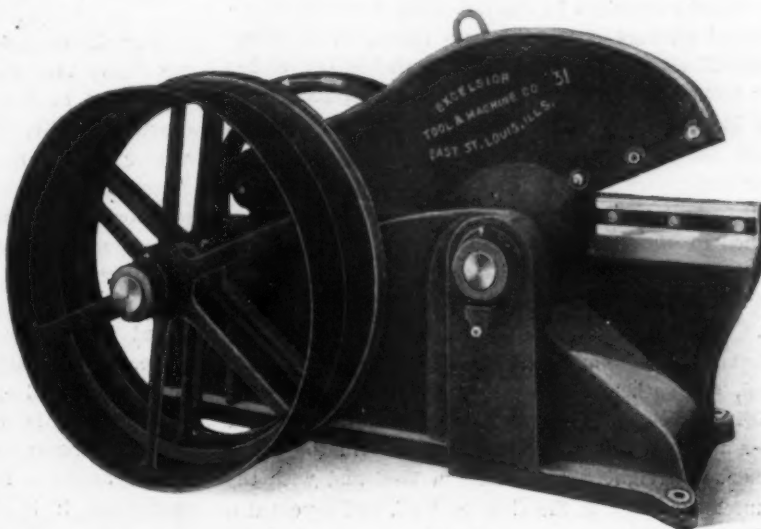
The company has at present a total authorized capitalization of \$37,650,000, of which \$19,540,000 is preferred and \$18,110,000 common. A special meeting of the stockholders has been called for February 8 to indorse the plan.

The scrip is to be paid to holders of the preferred stock at the rate of \$20 on each \$100 and is to be dated February 1. It is described in the announcement of the plan as "debentures of the company," and will bear 4 per cent. interest, being payable as to principal in 15 years from date. The cash distribution to be made is \$3 per share on the preferred stock. The stockholders

assenting to the plan are requested to deposit their stock with the Guaranty Trust Company, New York.

The Indiana Railroad Commission Works for Harmony.

The Indiana Railroad Commission, in its second annual report, discusses the results attained. In spite of the fact that it has become involved in a great amount of litigation with railroads, making it necessary to employ special counsel in many cases pending that are important to the public and the railroads, and the outcome of which is uncertain, the commission believes the public has been benefited in numerous ways. Chief of these, it says, is in having a tribunal with very comprehensive powers to appeal to; an organized body whose officers are always ready to receive and act promptly upon any application within its authority. Overcharges, car shortage, insufficient train facilities and grievances of many kinds have been corrected, sometimes by telegraph or telephone within a few hours after the matter was presented to it. Defects and neglects that might have caused accidents have been promptly taken up and rem-



A New Alligator Busheling Shear Built by the Excelsior Tool & Machine Company, East St. Louis, Ill.

edied, and obstructions, overhead and lateral, have been discovered and removed.

The commission has a tariff department with files that may be consulted or inquired about by any shipper in the State. The tariffs when filed are examined by the commission, and if found out of line are at once called to the attention of the carrier for correction. Other steps failing, formal proceedings are begun to the end that transportation in the State may be upon uniform classifications, and that fair, equal and reasonable rates may prevail. Indiana car service rules formerly made no exception of weather conditions, but required loading or unloading in 48 hr. time; no exception was made when cars were "bunched" on the shipper in number far beyond his capacity to load or unload, and no notice of arrival or placement was required. All this has been corrected.

The report continues: "The best part of our work may turn out to be the restoration of harmony between carriers and shippers. The commission does not pass an opportunity to bring about adjustments." There is an inspection bureau in connection with the commission, which investigates and reports upon the physical condition of the railroad property in the State.

In December export shipments of British pig iron fell off rapidly. A number of furnaces in the Cleveland District have been blown out, and the curtailment movement is expected to go farther. Pig iron stocks in warrant yards showed a slight decrease in December, the blowing out of furnaces preventing accumulations in store thus far.

THE IRON AGE

Established in 1855.

New York, Thursday, January 16, 1908.

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						HARDWARE EDITOR.

Steel Car Requirements.

The statistics of steel car construction in 1907 are not so definite as might be desired, since there is no separation of all-steel cars from cars having steel underframes. Moreover, the statements published concerning orders booked show some variation. For example, it was stated in the compilation made by one of the railroad journals one year ago that 142,000 cars of steel or steel underframes were ordered in 1906 out of a total of 259,000 freight cars. The statistics in the same journal published at the close of 1907, in giving the record of steel car or steel underframe orders for several years, credits 1906 with a total of only 90,000 of such cars ordered.

The statistics of cars built, as distinguished from cars ordered, are gathered by another journal. They show that 284,188 freight cars were built in contract shops last year—a figure which tallies measurably with the above statement of freight cars ordered in 1906 and with the announcement made at the close of 1905, and repeated a year later, that the contract car shops were booked for 10 to 12 months ahead. Of the freight cars built in 1907 it is stated that 72 per cent. were of all-steel or steel underframe construction, which would mean a total of about 204,000 cars of these two classes. It may be that this figure is above the actual, but it is well known that the street car shops had a very considerably increased capacity in 1907, compared with that available in 1906. According to some estimates made early last year 150,000 steel cars could be turned out in 1907, as compared with a capacity of 100,000 in 1906, leaving out of the account wooden cars with steel underframes. As some of the steel car companies were turning away orders for steel underframes last year, having their equipment completely engaged on all-steel cars, it is evident that the consumption of steel plates and shapes and steel axles for all-steel cars was much larger in 1907 than in any other year. It was probably above 2,000,000 tons.

Unfortunately there is no promise for anything like full employment of the car shops in 1908. The *Railway Age* reports the number of all steel cars ordered in 1907 to be 27,800, and of cars with steel underframes, 44,500. Assuming that some of these orders were filled in the same year and that work on others was held up, the books of the car builders are more nearly empty than has been the case since the close of 1903. The promptness with which shipments of all commodities have been made in recent weeks points, moreover, to a condition in which rolling stock and terminal facilities will be entirely adequate to the demands of manufacturers. The

emphasis laid by the Interstate Commerce Commission in a report issued since the beginning of the year on the tremendous handicap to the country's development chargeable to insufficient equipment may not be impressive, viewed as a commentary on current conditions. But the problem is one not to be shelved by a mere halt in prosperity. Mr. Hill's familiar estimate that \$1,100,000,000 a year for five years will be needed by the railroads for extensions and equipment, and the recent proposal of a well known railroad official that the Government build cars and locomotives and lease them to the railroads, give some idea of the extent to which, in the minds of such authorities, the country's future is involved in railroad financing. Such views suggest, moreover, that the now uppermost question as to the speediness with which business will return to normal is practically identical with the question how soon the investors of the country and of Europe can be persuaded to get under the programme that has been laid out with so bold a hand.

A Fallacy of Machinery Driving.

Certain users of machine tools conduct their works on the theory that the most economical practice is to push machinery to the extreme limit of production. They shorten its life, but get a great deal out of it in the briefer period of its usefulness. Among other manufacturing establishments a number of railroad shops are operated on this basis, their managers constantly seeking the opportunity to set a faster pace for each piece of machinery. They follow in the shop a railroad theory that rolling stock, especially a locomotive, should be forced to do its maximum of work during a few years rather than to attempt to lengthen its useful existence by more careful operation, avoiding the repair shop except when it is absolutely necessary that parts be renewed or renovated. The theory of this procedure is that, granting a machine a given amount of productive usefulness, it is cheaper to consume this energy in a limited period than to prolong the process by more conservative methods. However excellent a theory this may be in the traffic department of a railroad, its economy in industrial works is disputed by most experts in machine shop practice, except where it is very strictly safeguarded by the application to each individual machine of an exact cost system, which is not always available.

In practical every-day work nearly every machine tool has a limit at which it can be economically operated. Exceptions are to be found among the heavier tools which are built to do work up to the strength of the high speed steels, but even these, though able to stand up under severest strains, sometimes have a tendency to develop weaknesses when their maximum capacity is adopted as the standard for every-day work, necessitating their laying up for repairs. Below each class of rapid reduction machines are others of the same type, ranging down through the scale in degree of capacity and corresponding lightness of construction. Each is designed to do work up to its individual limit, and when that limit is passed an overstrain is imposed and the wear must necessarily be great and repairs frequent. And, as in the case of the heavier tools, constant service under maximum duty conditions, even as intended by the designer, is apt to develop weak spots in mechanisms, requiring the machine to be laid off for a time.

Production experts are tempted to set too high a required capacity on a machine tool in the endeavor to reduce time of manufacture. If they have a corrective system which will soon discover the error of excessive

load, their efforts should be fruitful of economies. Otherwise, what appears to be reduction in cost may prove to be added expense, or a failure to secure a saving which would have followed a less ambitious effort with the same machine, as experience has demonstrated in the relations of machine tool builders with their customers. On its face, the general proposition seems sound that if a machine will accomplish in 40 min. a task that has been taking 60 min. to perform, there is a saving of 33 1-3 per cent. in labor, and as the machine is producing a correspondingly greater amount of work each hour its items of cost other than labor, such as investment and share in overhead cost, are more widely distributed over its product. The life of the tool may be reduced, the time of its replacement may be brought much nearer, yet reckoning into account the saving in labor and the increased production there is a theoretical economy. This is the basis of the practice of extreme production.

But there is a well defined limit beyond which it does not pay to go. No machine should be given a service so severe that its days of idleness, due to breakdown, are materially increased. If in the case already cited, where 20 min. were saved on each piece by speeding up a machine, frequent breakdowns should follow as a result of the increased strain, the days of nonproduction would soon eat into the saving until it ceased to exist or until the apparent economy became a loss. This is the weak side of forced production. A superficial estimate may indicate a large increase in product, but, reckoning in the cost of repairs and the loss through idleness, all gain may be nullified. No one day's or one week's production tells the story; a protracted period of time must be taken to show up the actual condition. The factor of interference with shop routine by frequent repairs must also be taken into account in considering the question, for demoralization is always costly. In certain shops the number of high class tools out of commission is frequently noticeable, and the condition usually accompanies the efforts of a too ambitious production department.

According to the experience of a large manufacturer of heavy machine tools, the efforts of the production department require the corrective influence of a consistently maintained machinery record. The life of each machine tool should be closely followed from the day of its installation to its going out of commission for good, and each incident of its history entered upon its record. A card system accomplishes this end, constituting an adjunct of the regular cost system. In the works of this manufacturer each repair job on a tool, with the nature of the accident, is reported to him on the day it begins, the job card being placed on his desk, and when the work is completed he receives the record of the time and cost. The items are entered on the card of the machine, together with the number of days of idleness. Weak parts are soon brought to light; several repair jobs on the same member of a machine tell the story. Such instances are carefully investigated. Sometimes the trouble lies with the machine itself, but in other cases the cause is the nature of the work imposed upon it, the task being beyond the intentions of the designer. It may readily be seen that a production department could learn much of the success or nonsuccess of its efforts by the use of this system. In one case in these shops the cost of production on a milling machine job was reduced from 5 to 3 cents by speeding up the work. Breakdowns followed, however, until the personal attention of the manager was called to the matter, and his investigation revealed the fact that the work was actually costing more under the increased rate of production. The solution was an easy one; a machine of greater capacity was pur-

chased and the cut in cost was accomplished. This is a typical instance, and serves to establish the fact that the correct practice is either to give a machine a load it can stand, or else replace it with one heavy and powerful enough to bear the heavier strains. Specialization enters into the subject of rapid production quite as largely as in any other branch of machine shop practice.

Concord on Steel Rail Questions.

We have noted heretofore the more pacific tenor of the comment from railroad sources on the issues that have been discussed for some months by the manufacturers and the buyers of steel rails. The intemperate and, in some cases, thoroughly reckless, criticisms of the rail manufacturers and their methods have disappeared, and the representatives of the mills are given credit for an honest effort to meet all reasonable requirements of the railroads. Some surprise has been expressed in quarters voicing the opinion of railroad engineers at what is referred to as the "quite general acceptance of the new specifications," but the *Railroad Gazette* does not consider unreasonable the scale of prices based on \$28 for rails made from ingots with a 9 per cent. discard, with a graded additional charge for larger discards. While expressing disappointment at the failure to agree upon a fixed discard, our contemporary shows, in the following that the arguments of the rail mill experts on this question have not been without their effect:

The study and the work on this subject has not halted. It has not been confined to the members of the American Railway Association Rail Committee. Experiments have been made at three different mills to learn if physical defects can always be detected by breaking up crop ends from rails made from that part of the ingot where such defects commonly occur. If this proves practicable, and if the whole heat is rejected when a physical defect is so found, it may be a more scientific method than saying arbitrarily that in every case either a quarter or a fifth of the ingot must not be used. Involved also in this undertaking is a legible numbering of each rail, locating its position in the ingot, so that the record of breakages may indicate something more than it now does; and also so that users may, if they choose, select for the severer services rails with the higher numbers—made from the lower end of the ingot. There is now intelligent co-operation between the manufacturers and the railroad officers to the end of finding whether the arbitrary discard, which may be presumed to be effective, but which is certainly wasteful, is the only way out. The object of the present study and experiments is, if possible, to devise a specification which will avoid that waste, secure sound rails and furnish to the mills the greatest possible incentive to the improvement of the ingot.

The temper of the above comment and the considerations cogently presented by Dr. Chas. B. Dudley, chemist of the Pennsylvania Railroad, in a recent communication favoring some latitude in the matter of discard are proof that co-operation, not accusation and controversy, is the basis on which the improvement of this important product of American steel works is to be worked out. The discomfiture of foreign competitors, who looked with mingled pleasure and anticipation upon the falling out of our railroads and our rail manufacturers, is not the least gratifying feature of the outcome.

The Contract Labor Laws.

A movement is on foot to amend the contract labor laws with the purpose of restricting their interpretation by more sharply defining their limitations. It is stated that there have been so-called abuses under the clause which permits the importation of skilled workmen if unemployed labor of a like class cannot be found in this country. It is contended that this proviso was originally embodied in the law with the intention of permitting the bringing of skilled labor from abroad under contract only to assist in the establishment of new industries,

and the purpose of the movement referred to is so to amend the act that its interpretation shall be restricted to this very narrow limit.

The law as it exists, while doubtless working toward the immediate welfare of one class of the industrial community, does not always operate without hardship to employers of labor, and indirectly to their employees. It permits, among other conditions, the existence of unions so hedged about by rules as to apprentices that the classes of labor included are so sparsely represented in the community that even a slight increase in industrial activity beyond the normal produces a serious scarcity of the workmen in question. The injury caused by such restrictions is not merely that the wages of men in the restricted trades are extraordinarily high, but that more, when needed, are not to be had at any price, as so few youths have been trained in those specialties. This is only one form of industrial handicap that has followed the enforcement of the contract labor law in its stricter meanings, or would follow if no latitude whatever were given the authorities in its operation.

It could not have been the intention of those who drafted the contract labor law that it should restrict in any way the development of American industry. Probably the large majority of employers, with certain exceptions where private interests are benefited by the contract labor law, are of the opinion that Congress should incline toward loosening its application rather than toward tightening it. The argument is made that labor would be better served by placing no obstacles in the way of the immigration of specialized workmen, who would act not only as producers but as instructors, and whose utilization would promote the employment of many less skilled men.

CORRESPONDENCE.

The Darr Mine Rescue Work.

To the Editor: I have just had my attention called to an article appearing in your issue of December 26 last, under the head of "A Questionable Interference," in reference to members of the United States Geological Survey interfering with the rescue work at our Darr Mine at the time of the recent accident. This article does the Government officials an injustice, as they were at the mine only for the purpose of assisting in any way that they could, and particularly for the purpose of ascertaining the cause of the accident with a view of offering suggestions to prevent further accidents, and the management of this company was glad to have them there and extended to them every facility possible to aid them in their investigations. We would, therefore, thank you to correct the impression which your article seems to have created.

W. R. WOODFORD,

Vice-president Pittsburgh Coal Company.

PITTSBURGH, PA., January 10, 1908.

The General Committee on Co-operation in the Steel Trade has decided to divide the duties heretofore referred to the subcommittee on rails and billets and has appointed an independent subcommittee on billets and sheet bars. The list as made up is as follows: John A. Topping, chairman; E. C. Felton, A. C. Dinkey, E. A. S. Clarke, Willis L. King, J. A. Campbell and Howard Wood.

The Detroit Trust Company, Detroit, Mich., was on December 31 appointed receiver for the Glazier Stove Company, Chelsea, Mich. This action became necessary, it is stated, on account of the recent financial stringency and embarrassment of local banking facilities. It is the purpose of the receiver to resume operations in the plant as soon as the taking of inventory is completed. Pending a reorganization, the business will be continued and orders solicited as heretofore.

Carnegie Answers Crane on Technical Schools.

Richard T. Crane, president of the Crane Company, Chicago, severely criticised technical education in a recent speech, stating that Andrew Carnegie might as well have thrown in a lake the millions of dollars with which he built and endowed the Carnegie Technical Schools in Pittsburgh. Mr. Carnegie has made public the following reply addressed to Mr. Crane:

"I have little time to devote to the defense of technical education. I do not think it needs any. It is speaking for itself, and will speak for itself, and even you will be satisfied by and by that we are on the right path. You asked me four questions. To the first I answer that when I started in business I did not know of one technically educated mechanic, but several families in Pittsburgh were sending their young men to Troy, and especially to Boston. One of them happened to be a relative, and he has made a great success, and is a partner now in one of the leading firms for special steels. I do not believe that he would have achieved this so rapidly had it not been for his superior education. If I were in business to-day the young man who I would take into my service would be the most highly educated mechanic. This answers all four of your questions, and I should like to ask you one in return. The apprenticeship system is a thing of the past. What do you propose as a substitute? The best one, and the one better than the original, is to give instructions to young men in technical schools."

Beard's Tin Scrap Compressor.

Ambrose Beard, New Kensington, Pa., has designed and is prepared to furnish a machine of moderate price for compressing tin or sheet scrap in convenient shape for handling. Those who are operating can making factories, stamping and enameling works or other establishments making sheet metal products, and for this purpose are cutting up tin plate, sheet steel or light black plate, need a device of this character which is not too expensive. In the case of many factories it is probable that an expensive piece of machinery for baling scrap would take a long time to save its first cost. A great many shops, however, which accumulate from 1 to 20 carloads of such scrap each year can, from the standpoint of economy and cleanliness, afford to use a contrivance of moderate cost.

Beard's compressor, as this machine is called, is portable, and can be operated by a boy. The bundles made measure 16 in. square at the base and can be regulated from 12 to 24 in. in height. The scrap is pressed together lightly or can be compressed in a dense, heavy mass to suit various requirements. For use in busheling furnaces of rolling mills a light bundle is required, running from 75 to 100 lb. in weight, while a larger package of 200 to 250 lb., which is the charging box size, can be used for open hearth furnaces. Machines of more elaborate construction, either belt driven or for electric motor power, are made according to plans and specifications, but the press now offered is merely intended to pay its own way in a large or small factory. One special feature of the compressor is in taking care of small pieces of doubling scrap on tin mills. A waster sheet forms a pan in the machine, and when filled the corners are pressed down and there is no loss of labor in picking up small particles when unloaded at the point of ultimate consumption.

The press has been born of necessity, Mr. Beard, who is a large consumer of scrap, having had many difficulties to surmount when handling light bulky scrap from cars, principally on account of broken bundles. He claims that the device which he has invented saves trouble and annoyance at the shops, because it takes care of scrap and puts it into marketable shape as fast as produced. It also saves money for the consumer, because cars can be quickly unloaded, and in these days it is an object to unload quickly, so as to save demurrage charges.

Director of the Mint F. A. Leach estimates that the United States last year produced gold to the value of \$89,616,017, against \$94,373,800 in 1906.

The Principal Coal Producing Countries.

Some very important statistics on the coal trade of the principal producing countries of the world are given in the recently issued report of the British Board of Trade. They cover the year 1906, to be sure, but there has been no great change in output from that year, nor yet in prices, for while there was a period of inflation in both respects, that has passed, and 1907 will average up pretty nearly what its predecessor was, with the exception, perhaps, of the output in the United States. This country arrived at so large an increase in the first half of the year that even the depression later did not wipe away the increase in output. The following table shows the production of coal in the five principal coal producing countries of the world in 1905 and 1906:

	1905. Gross tons.	1906. Gross tons.
Great Britain.....	236,129,000	251,068,000
Germany	119,350,000	134,914,000
France	34,652,000	33,762,000
Belgium	21,506,000	23,232,000
United States.....	350,821,000	369,672,000

Of the remaining countries, Russia alone had a production exceeding 20,000,000 tons.

The total known coal production of the world (exclusive of brown coal or lignite) in 1906 was about 905,000,000 tons, of which Great Britain produced rather less than a third.

The following statement shows the average value per ton of the coal produced, taken at the collieries, in the five above mentioned countries, in the years 1905 and 1906:

	1905. Per ton. s. d.	1906. Per ton. s. d.
Great Britain.....	6 11½	7 3¼
Germany	8 7¾	8 11½
France	10 6¼	....
Belgium	10 2¾	....
United States.....	5 8	5 9¼

The following table shows the production and value at mine of coal in the principal British colonies and possessions in the years 1905 and 1906:

	1905. Tons.	1906. Tons.	1905. Per ton. s. d.	1906. Per ton. s. d.
British India.....	8,418,000	9,783,000	3 4	3 11
Australia	7,494,000	8,596,000	6 2	6 3
New Zealand.....	1,586,000	1,730,000	10 7	10 0
Canada	7,739,000	8,717,000	9 4	9 4
Transvaal	2,327,000	2,583,000	7 3	6 5
Cape of Good Hope..	147,000	128,000	18 8	18 5
Natal	1,129,000	1,239,000	8 3	8 6

With regard to the number of persons employed in the coal mining industry, it is seen that a far larger number is employed in Great Britain than in any other country.

The countries which export coal in excess of the amount they import are Great Britain, Germany, the United States, Belgium and Japan. Of the British colonies and possessions included in the tables, Australia, the Transvaal, Natal and British India are in the same category. The following table gives particulars of the excess of exports over imports in 1906:

	Tons.		Tons.
Great Britain.....	76,739,000	Australia	2,046,000
Germany	15,632,000	Transvaal	62,000
Belgium	723,000	Natal	730,000
United States.....	8,180,000	British India.....	678,000
Japan	2,380,000		

The principal coal producing countries which imported coal in excess of the amount they exported were Russia, Sweden, France, Spain, Italy and Austria-Hungary, while of the British colonies and possessions included in the tables, Canada, the Cape of Good Hope and New Zealand are in the same category. The following statement shows the excess amount of coal imported in 1906:

	Tons.		Tons.
Russia	4,484,000	Austria-Hungary	6,745,000
Sweden	3,995,000	Canada	5,021,000
France	16,536,000	New Zealand.....	66,000
Spain	2,531,000	Cape of Good Hope..	447,000
Italy	7,519,000		

The consumption of coal in some of the chief consuming countries is shown in the following statement:

	1905.—Tons.	1906.—Tons.
United States.....	343,281,000	361,492,000
Great Britain.....	169,017,000	174,329,000
Germany	106,716,000	119,282,000
France	45,915,000	50,298,000
Russia	22,680,000	25,786,000
Belgium	19,661,000	22,509,000
Austria-Hungary	19,314,000	21,181,000

It will be seen from these figures that the consumption of coal in the United States is now twice as great as that in any other country; exceeding, in fact, the combined consumption of Great Britain, Germany and France. The consumption of coal per head of population in the United States now exceeds that of Great Britain, as appears from the following statement, which applies to 1906:

	Tons.		Tons.
Great Britain.....	3.99	France	1.28
United States.....	4.30	Austria-Hungary	0.44
Belgium	3.17	Russia	0.17
Germany	1.94		

It appears from the above that Belgium is the only country except Great Britain and the United States in which the per capita consumption exceeds 3 tons per annum. Both in France and Germany the consumption per head appears small, but in these countries a large quantity of fuel of other sorts, such as turf, lignite and denatured spirits, is also in use.

The following table shows what has been the percentage proportion of the coal consumed in the principal coal producing countries, whether of native, British or other production. The figures refer to 1906:

	Coal of native production. Per cent.	British pro- duction. Per cent.	Production of other countries. Per cent.
Great Britain.....	99.98	....	0.02
United States.....	99.52	0.02	0.46
Germany	91.48	6.29	2.23
France	63.64	16.66	19.70
Belgium	73.43	6.79	19.78

In Germany the quantity of British coal consumed was about the same in quantity as in 1905, viz., about 7,500,000 tons, although owing to the larger German production in 1906 the proportion has fallen from 6.95 per cent. of the German consumption in 1905 to 6.29 per cent. in 1906. The average quantity of British coal consumed in Germany during the 10 years, 1895-1904, was only 4,998,000 tons.

In the remaining coal producing countries the proportion of native coal, of British coal and of coal produced in other countries has been as follows, the figures relating to 1906:

	Coal of native production. Per cent.	British pro- duction. Per cent.	Production of other countries. Per cent.
Russia	82.24	11.39	6.37
Sweden	6.81	86.05	7.14
Spain	55.43	42.71	1.86
Austria-Hungary	61.28	2.54	36.18
Japan	99.79	0.10	0.11

Drawback on Pig Iron Made from Imported Ore.—

The regulations of the Treasury Department establishing a rate of drawback on pig iron and other products manufactured by the Maryland Steel Company, Sparrows Point, Md., from a mixture of imported ores, have been amended by ordering that the manufacturer shall keep a percentage record of the domestic ores used and the per cent. of loss sustained in converting iron into steel. The final metallic product of any block of manufacture shall equal the metallic product of the imported material used, plus the metallic product of the domestic material used, with an allowance for loss not exceeding 20 per cent. on any block nor a yearly average of 15 per cent.

It is expected that the programme of improvements of the United States Steel Corporation for 1908 will include the erection of a steel bridge across the Monongahela River, between Monessen and Donora, Pa. This bridge is desired to take steel from the Donora mills to the tin plate plant of the American Sheet & Tin Plate Company and the hoop and cotton tie mills of the Carnegie Steel Company, which are located at Monessen.

Retort versus Beehive Coke Ovens.

A Comparison of First Costs and of Economies in Operation.

BY ALFRED ERNST, PITTSBURGH.

The report of the United States Geological Survey for 1906 shows interesting facts relative to coke production in beehive and retort ovens. As this report gives authentic figures covering an entire year, it is perfectly safe to base on them a comparison between beehive and retort oven practice, illustrating the wastefulness of coking coal in the beehive oven and the superiority of the retort ovens in every respect. A summary of the statistics is as follows:

Active beehive ovens in 1906.....	85,234
Coke produced in beehive ovens, tons.....	31,843,090
Annual capacity of one beehive oven, tons.....	373.6
Quantity of coal consumed in beehive ovens to produce 31,843,090 tons coke, tons.....	49,554,288
Yield, per cent.....	64.26
Active by-product ovens in 1906.....	3,362
Coke produced in by-product ovens, tons.....	4,558,127
Annual capacity of one by-product oven, tons.....	1,356
Quantity of coal consumed in by-product ovens to produce 4,558,127 tons of coke, tons.....	6,192,086
Yield, per cent.....	73.6

These figures show that much larger yields can be obtained in retort ovens, as a portion of the fixed carbon is unavoidably burned in beehive practice, while in the retort oven the operation is one of distillation only, without the admission of air, and all the fixed carbon remains in the coke. If the quantity of coal which was used in beehive ovens had been coked in retort ovens, we should have received $49,554,288 \times 0.736 = 36,471,956$ tons of coke, or 4,628,865 tons more from the same quantity of coal. In other words, the waste in producing 31,843,090 tons of coke in beehive ovens amounted to 6,000,000 tons of coal in 1906.

Cost of Installation.

It has been frequently asserted that the slow introduction of the retort oven in this country is attributable to its prohibitive cost of installation. All other points made against the retort coke as to appearance, color, structure, &c., are mere prejudices, due either to a lack of knowledge or to knowledge gained by superficial investigation and are gradually dying out. Tests made by eminent metallurgists and blast furnace managers have shown that the retort oven will produce from the same coal a coke in every way equal, and in some respects superior, to beehive coke as a blast furnace fuel, and it is therefore unnecessary to investigate this subject further.

In order to derive proper conclusions as to the first cost of installation, the beehive and retort oven must be compared on the same basis and under the same conditions—that is, actual cost of oven compared with output from the same quantity and quality of coal used. Referring again to the report of the Geological Survey, we find that in 1906 the annual capacity of one beehive oven was 373.6 tons, and that of one retort oven 1356 tons. In other words, the output of one retort oven was equivalent to 3.62 beehive ovens. Comparing the actual net cost of construction of the two types of ovens, we find that one beehive oven, on the basis of 100 ovens per bank, can be built above foundations for \$350 and one retort oven, on the basis of two batteries of 50 ovens in each, for \$965.

In order to obtain the same results relative to coke produced, the 3.62 beehive ovens will cost \$1267, against \$965; or, in other words, the beehive plant will be practically 31 per cent. more expensive than the equivalent retort plant. This does not in either case include any machinery for charging and drawing or any other appurtenances connected with the plant, as coal bins, crushers, conveyors, loading and receiving tracks, power plant, &c., which in modern plants of either type will practically amount to the same expenditure. It must also be understood that the retort oven in this case is not to be considered as a by-product oven, and that all gases evolved will be burned to heat the ovens, while the waste products of combustion can be used elsewhere.

The rectangular or so-called Belgian oven, lately introduced at one or two coke oven plants of the Connellsville region, works on the same principle as a regular round beehive oven; that is, part of the carbon of the coal is burned up to produce the necessary heat for the coking process. It has the advantage, though, that the coke can be pushed out for less money than from a round oven by employing a coke pusher similar in construction to the machine used in retort plants. This oven, being far more expensive than a round oven and having practically the same capacity, will be, therefore, more expensive than the equivalent retort oven.

The Difference in Earning Power.

The report cited shows that the average annual yield from beehive ovens was 64.26 per cent., against 73.6 per cent. in retort ovens. The labor for charging and drawing 3.62 beehive ovens will undoubtedly cost more than that for one retort oven; and, even neglecting this item of labor, we find that the difference of yield alone with coal at \$1 per ton will show a credit of $\frac{1}{0.6426} - \frac{1}{0.736}$

$= 20$ cents, in favor of the retort oven. Each retort oven, therefore, will earn per year $1356 \times 0.2 = \$271.20$ more than the equivalent 3.62 beehive ovens, which amount at 6 per cent. represents a saving on an investment of \$4500 in favor of the retort oven.

The item of repairs per ton of coke, which in a beehive plant amounts to 1.3 cent, against 5 cents in a retort plant can be neglected on account of having omitted the cost of labor, which will fully equalize the difference in cost of repairs.

The Use of Surplus Gas for Power.

By adding some apparatus to the retort oven for collecting raw gas and for cleaning and separating it from tar we will still remain inside of the cost of an equivalent beehive plant and derive certain profits from the commercial value of the surplus gas and tar. One ton of coal will give off during the 24 hr. of the coking process 10,000 cu. ft. of gas, of which 6000 cu. ft. are required for heating the ovens. The 4000 cu. ft. of surplus gas, having a thermal value of 500 B.t.u. per cubic foot, can be used under steam boilers or direct in gas engines. Better results, though, can be obtained by preheating the air for combustion, to which we will refer later.

One pound of water can be evaporated with $\frac{965.8}{0.7 \times 500} = 2.76$ cu. ft. of this gas; 4000 cu. ft., therefore, can evaporate per hour $\frac{4000}{2.76} = 1449$ lb. of water. As 1 hp. results from the evaporation of 34½ lb. of water at 212 degrees F., we therefore get for every ton of coal coked surplus power amounting to $\frac{60.38}{34.5} = 1.75$ boiler horsepower hours. Assuming that the steam engine equipment will make 1 b.h.p. on 20 lb. of water per hour, 1 ton of coal coked will produce 3.19 hp. during 24 hr. continuously.

This surplus gas can be utilized to better advantage in gas engines. Gas engine builders guarantee to produce 1 b.h.p. per hour on 10,000 B.t.u.; and as 1 cu. ft. of coke oven gas has 500 B.t.u., 1 hp. per hour can be produced on 20 cu. ft. of this gas. For each ton of coal coked we get, if the surplus gas is used in gas engines, $\frac{4000}{20} = 200$ hp. per hour, or 2.6 times the power derived by using the gases under steam boilers.

In most of the present beehive oven plants the products of combustion are entirely wasted, and so much smoke and soot arise from them as to necessitate the restriction of their location to the more thinly populated regions, as no city or town of any pretensions would permit this nuisance in its vicinity. Very few of the existing plants, though, have adopted a flue system collecting these waste products of combustion and leading them to be utilized under steam boilers. Assuming the heat value of 1 lb. of coke to be 13,000 B.t.u., the coke produced from 1 lb. of coal will represent $13,000 \times 0.65 = 8450$ B.t.u., as the best coking coal yields about 65 per cent. of coke.

The heat value of the coal would be about 13,500 B.t.u.; hence the thermal loss during the coking process is 13,500 — 8450 = 5050 B.t.u. Experience has shown that 50 per cent. of this is lost by radiation and 60 per cent. of the remainder can be utilized by proper arrangement of flues and stack in connection with a well designed boiler of ample heating surface.

The waste gases from 1 ton of coal coked in the beehive oven during 48 hr. will therefore evaporate: $2000 \times 5050 \times 0.5 \times 0.6$
 $\frac{965.8 \times 48}{65.36} = 65.36$ lb. of water per hour.
 If, as above, 1 b.h.p. per hour can be performed on 20 lb. of water we produce $\frac{65.36}{20} = 3.26$ hp. continuously during 48 hr.

It can readily be seen that the retort oven considered as a power producer is superior to the beehive oven. The cost of the gas engine equipment will not be higher than the combined boiler and steam engine plant.

By-Product Saving.

Greater economies can be obtained by adding to the retort oven a complete plant to recover all the by-products. By coking in by-product ovens 1 net ton of coal of quality as at present used in beehive ovens the following yield can be obtained:

Coke, pounds.....1,470
 Tar, pounds.....100
 Ammonia sulphate, pounds.....20
 Surplus gas, cubic feet.....4,800

It has been repeatedly stated that there is no profitable market for tar in the United States, notwithstanding the fact that since July 1, 1907, coal tar pigments and products, not including alkaloids used as medicine, imported from Germany were valued, to the buyers, at \$1,468,338, an increase over imports for a like period of 1906 of \$253,381.

Here is an average monthly import of commodities for which there is a constantly expanding use and market of over \$367,000, for the manufacture of which we have all necessary raw materials in abundance, and capital and knowledge; and yet there is not a pound of coal tar colors and dyes made in this country in a commercial way. There is not any trouble in disposing of the ammonia; for this a good demand exists.

The quantity of available surplus gas can be increased by proper construction of the ovens for the purpose of preheating the air necessary for the combustion of the gas used for heating the ovens. Theory and practice have proved that the waste products of combustion contain more than enough sensible heat to preheat the necessary quantity of air by means of regenerators to 1000 degrees F. and over, and therefore increase the surplus gas 20 to 25 per cent. over that available when the air is not preheated. The value of the coke oven gas as a source of power has been mentioned before, but we must add that this gas can also be used for illuminating purposes, as demonstrated successfully in several American cities.

By employing an up to date system of by-product ovens and efficient apparatus for the recovery of by-products, the returns from the sale of coke, tar, ammonia and gas will fully justify the installation of such ovens, instead of the wasteful beehive ovens, even at the greater first cost of investment.

Building Operations in 1907.—Building operations throughout the country showed a marked falling off in the last few months of 1907. Still, the operations for the entire year compare favorably with those of 1906 when the stress of the last two months is taken into consideration. The estimated value of contemplated buildings in 56 cities throughout the country was \$588,769,000 in 1907, compared with \$659,439,000 in 1906. In those cities located in the States commonly known as Northern, there was a decrease of 14 per cent., the figures for the two years being \$297,639,000 and \$340,137,000 respectively. The falling off in New York City alone would account for the entire decrease. In the Middle West the decrease amounted to but 5 per cent., and here the entire shrinkage could be accounted for in Chicago

and St. Louis. In the Southern States nine cities showed a decrease of approximately 13 per cent. On the Pacific Coast there was a decrease of 20 per cent., due altogether to a marked falling off in San Francisco and Los Angeles where labor troubles have been rampant for months. In the Eastern States the fact must be taken into consideration that during the latter half of 1906 there was a marked falling off, consequently the comparative returns make the year 1907 show up better than the situation really is. The wave of decreased operations seems to be gradually spreading westward.

Uniformity of Basic Iron with the Gayley Dry Blast.

The Gayley dry blast has been in operation at the furnace of the E. & G. Brooke Iron Company, at Birdsboro, Pa., running on basic iron. The following analyses of silicon and sulphur contents compare with sulphur contents on corresponding dates a year previous, when the furnace was running on natural air:

Basic Iron Made with Dry Air Blast.

Date.	Dry air blast. 1907-1908.		Natural air. 1906-1907.
	Silicon.	Sulphur.	Sulphur.
December 27.....	0.65	0.016	0.037
	0.75	0.021	0.030
	0.70	0.019	0.026
	0.35	0.036	0.027
	0.35	0.050	0.025
	0.30	0.046	0.029
December 28.....	0.45	0.033	0.030
	0.55	0.030	0.040
	0.65	0.027	0.036
	0.50	0.018	0.037
	0.50	0.016	0.042
	0.45	0.034	0.026
December 29.....	0.35	0.022	0.035
	0.50	0.024	0.032
	0.65	0.021	0.032
	0.55	0.023	0.028
	0.60	0.021	0.030
	0.35	0.023	0.053
December 30.....	0.50	0.021	0.050
	0.80	0.019	0.048
	0.55	0.027	0.055
	0.60	0.021	0.052
	0.50	0.015	0.037
	0.55	0.024	0.061
December 31.....	0.50	0.019	0.050
	0.45	0.021	0.058
	0.50	0.023	0.053
	0.60	0.021	0.037
	0.50	0.027	0.025
	0.50	0.013	0.035
January 1.....	0.40	0.024	0.042
	0.35	0.018	0.029
	0.35	0.034	0.046
	0.65	0.017	0.020
	0.80	0.019	0.030
	...	...	0.025
January 2.....	0.70	0.026	0.033
	0.45	0.033	0.024
	0.50	0.028	0.021
	0.55	0.024	0.027
	0.75	0.018	0.025
	0.50	0.013	0.020
January 3.....	0.40	0.019	0.022
	0.25	0.044	0.022
	0.30	0.028	0.029
	0.45	0.027	0.032
	0.50	0.029	0.026
	0.35	0.030	0.027
General average.....	0.51	0.024	0.035

It will be observed how regular are the silicon and sulphur with dry air, as compared with natural air. The results with basic iron, too, furnish a hint of the advantages through regularity of grade which would be obtained with a furnace making foundry iron.

At the plant of the Portsmouth Steel Company, Portsmouth, Ohio, the only department now running is the foundry, but work on the new bar mill to roll tie plates is being actively pushed.

The Lackawanna Steel Company, Buffalo, N. Y., started up on Monday morning of this week a part of the open hearth department and mills Nos. 4, 5, 6, 7 and 8 to fill accumulated orders.

The Engineers' Society of Western Pennsylvania, Pittsburgh, has elected J. K. Lyons president, E. K. Morse vice-president and A. E. Frost treasurer.

Changes in Customs Administrative Laws.

WASHINGTON, D. C., January 14, 1908.—The Ways and Means Committee of the House of Representatives will decide in a few days whether the customs administrative laws shall be amended in the present Congress or action deferred until after the Dingley Tariff act is revised. The committee's decision will certainly be reached before the end of the present month and will be awaited with much interest, for it will be recognized as involving much more than the mere question as to whether the act of June 10, 1890, shall be so modified as to bring it into line with the best modern business practice. The commercial relations of the United States with Germany, and possibly with France, depend to some extent upon the outcome.

Scope of the Movement.

The pressure for revision of the customs administrative laws comes from three distinct sources. The Secretary of State, in pursuance of the reciprocity agreement made with Germany through the instrumentality of the North Customs Commission, which went into force July 1, has recommended a series of amendments to section 7 of the act of 1890. The Secretary of the Treasury in his last annual report to Congress urged the adoption of a number of important modifications. Finally, certain influential interests, including both importers and domestic manufacturers, are urging upon the committee the enactment of a law forbidding the Treasury Department to continue to accept "export" prices as the basis of invoice valuations of imported merchandise.

The proposed amendment of section 7 of the act of June 10, 1890, having an international bearing, is naturally regarded as the most important phase of this interesting subject. The Secretary of State agreed to recommend these changes as a part of the concessions made by the United States to Germany in the reciprocity convention negotiated last spring, and it is obvious that if the recommendation should be ignored by Congress the German Government would be justified in denouncing the existing convention upon its expiration. The agreement expires on July 1, 1908, but will continue in force for six months from the date on which either of the signatory powers gives notice of its desire to terminate the arrangement. In the case of the reciprocity agreement now being negotiated with France, the recommendations of the Secretary of State regarding section 7 are also in view and will constitute a part of the consideration upon which it is hoped that France will consent to the application of the minimum rates of her tariff to a very large proportion of the current imports of American products.

Amendments to Section 7.

The modification of Section 7 as desired by the Secretary of State embodies the following changes: 1, giving to the owners of consigned merchandise the same privilege that is enjoyed by the consignees of purchased merchandise, namely, to add on entry to the invoice value in order to make market value; 2, to deduct from the invoice value of both consigned and purchased goods in order to make market value; 3, additional duties are not to be levied within a margin of 10 per cent.; 4, prima facie evidence of fraud arises where the merchandise is undervalued 35 per cent. instead of 50 per cent., as heretofore; 5, penal duties assessed for undervaluation are to be treated as penalties and not as duties, thus giving the Secretary of the Treasury authority to remit such penalties when the fact is demonstrated that no fraud was attempted; 6, penal duties are not to be assessed on goods paying specific duties where the rate of duty is not changed by the advance in value by the appraiser.

These amendments, taken as a whole, will constitute highly important concessions to the importing interests, and will apply to the products of all countries brought into the United States. Customs experts are fully convinced that no loss of revenue will result from these proposed changes, but that while the routine of importation will be facilitated the interests of the Government will be more adequately protected than at present.

Treasury Department Recommendations.

Second only in importance to the proposed amendment to Section 7 are the suggestions made by the Secretary

of the Treasury, which cover a much broader field than the original act of 1890. Mr. Cortelyou will heartily endorse the recommendations of the Secretary of State regarding the amendment of Section 7, and in this connection will emphasize the need of legislation that will give to the Secretary of the Treasury such power as will enable him to remedy mistakes made by the importer whose transaction is in good faith and who has no intent to evade the law or defraud the revenue. He contends that the Secretary of the Treasury should be authorized to remit additional duties where unintentional errors have been committed and that similar power should be vested in him in regard to refunds, which he cannot now make in the absence of timely protest and appeal, in cases where more moneys have been paid to the customs officials than the law requires. The Secretary also recommends the licensing of customs brokers for the joint protection of reputable individuals engaged in this business and of the importers they may be called upon to serve and indirectly of the Government itself. A recommendation by the Secretary that will no doubt be promptly acquiesced in, if legislation is undertaken at this time, involves the application to mail importations of all regulations regarding invoice declarations, etc., which now apply to goods imported through the regular commercial channels. The Department frequently finds that the somewhat lax rules concerning the transmission of merchandise through the mails permit irregularities, especially in the undervaluation of goods of small bulk but high value, like fine cutlery or surgical instruments.

The Secretary of the Treasury also strongly recommends the extension of the time within which an importer may file a request for reappraisal or a protest against classification and the adoption of a protest fee. The Government has a year in which to request reappraisal or reliquidate entries, while the importer has but two days for filing a request for reappraisal and 10 days within which to protest against classification. It is apparent that this is inequitable, and the Department therefore urges that the period be extended to at least 15 days in both cases. With a view to putting a stop to the wholesale practice of filing protests in all cases, it is proposed that there shall be a filing fee of \$5 to be refunded in case of a decision in favor of the protestant.

The Export Price Controversy.

The attempt of certain interests to compel the Treasury Department to abandon export prices as the basis of invoice valuations—an important concession made to Germany in the convention negotiated by the North Commission—will probably be unsuccessful. A case is now pending to determine whether the Department has the right under the present law to accept any invoice valuation except that based upon market value for home consumption in the country of origin, but the officials are confident of winning upon the contention that where goods are made for export only they can have no value for local consumption. To meet the assertions that the adoption of the export price has resulted in unusually large importations of German and French goods since July 1 last, the Department has compiled figures which seem to show that conditions have been absolutely normal, and that in the case of Germany, especially, the increase in our importations has been almost exactly offset by a gain in our exports to that country.

It is probable that in considering the advisability of amending the customs administrative laws at this time, the Ways and Means Committee will take into account the outlook for the comprehensive revision of the Dingley act. If the majority leaders believe that the present tariff law will be overhauled immediately after the next Presidential election, as has been suggested by President Roosevelt, it is likely that action as to the administrative statutes will be deferred and the two subjects taken up together. In view of the personnel of the new committee as made up by Speaker Cannon, however, the outlook for tariff revision in the near future is not promising, and a decision to revise the customs administrative laws at this time will therefore surprise no one here who has followed developments closely during the past few months.

W. L. C.

OBITUARY.

WILLIAM CHISHOLM, SR., one of the pioneer iron men of Cleveland, Ohio, and for the past 30 years head of the Chisholm Steel Shovel Works in that city, died January 10 of pneumonia. He was born in Scotland and came to this country in 1848. After residing in Montreal a few years he went to Cleveland early in the 50's. Mr. Chisholm's brother, Henry, who died several years ago, was one of the founders of the rolling mill industry in Cleveland, having been one of the organizers of the firm known as Chisholm, Jones & Co., and later as Stone, Chisholm & Jones, that in 1857 built a mill to roll rails and bar iron, this being the first rolling mill in Newburg. The Newburg mill later developed into the Cleveland Rolling Mills Company. William Chisholm gained his first experience in the iron and steel business as superintendent in the Newburg mill. Later he founded the Chisholm Steel Shovel Works. He remained at the head of the concern until his death, although his health during the past few years had not permitted great activity. He was also one of the founders of the Union Steel Screw Company of Cleveland. He leaves one daughter and one son, the latter being H. A. Chisholm, superintendent of the Chisholm Steel Shovel Works.

DAVID S. EGGLESTON of the old and well-known firm of Eggleston Brothers & Co., iron and steel merchants, New York, died January 1, after a lingering illness, aged 78 years. He had lived in New York almost all his life, and was actively engaged in business up to the time of his illness. He was a director of the Bank of America, the Seaman's Bank and the Hanover Fire Insurance Company, and was a member of the Union and Metropolitan clubs. He leaves a widow.

LEOPOLD VILSACK, Pittsburgh, died December 26, aged 69 years. He was president of the Epping-Carpenter Company, manufacturer of pumps and machinery; president of the Vilsack-Martin Company, manufacturer of machinery; vice-president of the Pittsburgh Brewing Company, director of the Crucible Steel Company of America, vice-president of the Allegheny Plate Glass Company and of the German National Bank and president of the East End Savings & Trust Company. He leaves 12 sons and daughters.

ROBERT B. BROWN, one of the organizers of the Duquesne Steel Company, absorbed by the Carnegie Steel Company, died at Pittsburgh, January 2, aged 61 years. He was a native of that city, was educated in the Western University and Sheffield Scientific School of Yale, and had been prominent in various lines of business. He became president of the Union Bank when a very young man, and was one of the organizers of the first company to pipe natural gas into Pittsburgh. He leaves a widow and three daughters.

LEFFERTS L. LEFFERTS, proprietor of a galvanizing works in New York City, died January 9, aged 67 years. He was a native of Michigan, and was a pioneer in the manufacture of enameled iron bathtubs. For some years he was connected with the firm of Jordan L. Mott & Co., New York.

JOHN NEELY, assistant treasurer of the Crucible Steel Company of America, Pittsburgh, died January 1, aged 68 years. Prior to the organization of that company he had been cashier of the Park Steel Company.

THEODORE L. WEBSTER, secretary of Warren Webster & Co., Inc., Camden, N. J., was killed in a railroad accident in that city December 27. He had been connected with the company from its establishment 20 years ago. He was a brother of Warren Webster, the president, and A. Spencer Webster, the treasurer, of the company.

GUSTAV KRUG, senior member of the firm of G. Krug & Son, manufacturers of wrought iron work, Baltimore, died January 4, aged 77 years. He was a native of Germany, but came to this country when a youth. He leaves one son and one daughter.

THEOPHILUS HARRISON, president of the Harrison Machine Works, Belleville, Ill., died at San Diego, Cal., December 31, aged 76 years. He was a native of Belleville,

but had lived for some years in Colorado and California. He leaves a widow and two daughters.

GEORGE L. HENRION, for several years superintendent of the Michigan department of the American Car & Foundry Company, died at Detroit January 6, aged 49 years. He was a native of that city and had won a high reputation as a shop organizer. He leaves a widow, two sons and a daughter.

FREDERICK A. POTTER, for more than 45 years superintendent of the Fales & Jenks Machine Company, Pawtucket, R. I., died suddenly January 8. He had retired from active business early last year. He leaves a widow and a daughter.

PERSONAL.

The President has sent the name of George W. Wanmaker to the Senate to be Appraiser of the Port of New York in succession to Col. Edward S. Fowler, promoted to be Collector of the Port. Mr. Wanmaker has held the office of Assistant Appraiser since 1897, and has been Deputy Appraiser since 1899.

J. Gibson has been appointed superintendent of the furnaces of the Tennessee Coal, Iron & Railroad Company, which produce foundry iron, and will be in immediate charge of the company's Bessemer and Oxmoor furnaces.

E. P. Williams has been appointed superintendent of the Ensley furnaces of the Tennessee Coal, Iron & Railroad Company.

Alfred W. Kiddle, Charles A. Wendell and Lucius E. Varney have formed the firm of Kiddle, Wendell & Varney, and will continue the practice of patent law, with which they have been long connected. The offices are in the United States Realty Building, New York.

Walter S. Snow of Boston, a former president of the New England Foundrymen's Association, but now engaged in independent practice as a publicity engineer, was recently elected an honorary member of that organization.

F. K. Rhines, engineer, has become assistant to the treasurer and general manager of the General Fireproofing Company, Youngstown, Ohio. He was formerly engineer with the East Iron & Machine Company, bridge builder, at Lima, Ohio, and more recently has been chief engineer and general manager of the Dixon Engineering & Construction Company, Toledo, Ohio.

Herman Nieter has opened an office at 2 Rector street, New York, as Eastern agent for the Canton Boiler & Engineering Company, Canton, Ohio, and the Braddock Machine & Mfg. Company, Braddock, Pa.

An error was made in the issue of January 2 announcing that Edwin H. Fowle, formerly of San Francisco, had been appointed representative in Denver for the Carnegie Steel Company, Illinois Steel Company, American Sheet & Tin Plate Company and National Tube Company. Mr. Fowle, whose offices are in the Majestic Building, is to represent the National Tube Company, distributing in the Rocky Mountain District the products of that company, the Western Tube Company and the Shelby Steel Tube Company. Edw. M. Sparhawk, whose offices are in the Equitable Building, Denver, will continue to represent the Carnegie Steel Company, Illinois Steel Company and American Sheet & Tin Plate Company as heretofore.

The Wm. J. Smith Company, New Haven, Conn., manufacturer of adjustable reamers and taps and special machinery, has added to its staff as sales manager Gorham C. Parker, who has been conspicuously successful as head of the selling department of another company.

M. J. Drummond, New York, who has been seriously ill, has so far recovered that he is now able to be taken out for short rides.

H. Osterberg, formerly general manager of the Demmler plant of the American Sheet & Tin Plate Company, and H. J. Scanlon, until recently superintendent of the tinning department of the same plant, have resigned to accept positions with the Washington Tin Plate Com-

pany, Washington, Pa., the former having charge of the hot mills and the latter the tin house. The Washington Company has some orders booked and starts operations in all departments this week.

Robert M. Kilgore has been appointed district sales agent for the Cleveland District of the Jones & Laughlin Steel Company. On January 20 he will succeed Otis, Bonnell & Co., who have had the Cleveland sales agency of the Jones & Laughlin Company for several years. Mr. Kilgore has been connected with the sales department of the general offices in Pittsburgh for several years. His Cleveland office will be located at 804 to 808 Rockefeller Building.

The Production of Copper in 1906.

The revised figures from the United States Geological Survey regarding the production of copper are at hand in the official report by L. C. Gratton. The total smelter production was 917,805,682 lb. in 1906, as compared with 901,907,843 lb. in 1905. The production for 1906 constitutes a new high record. In the accompanying table is

Production of Copper in the United States in 1906.

	Smelter production. Pounds.	Mine production. Pounds.
Alaska	8,685,646	5,871,811
Arizona	262,566,103	266,831,864
California	28,153,202	28,726,448
Colorado	7,427,253	5,720,929
Georgia	17,182	26,198
Idaho	8,578,046	9,558,913
Massachusetts	9,744	9,744
Michigan	229,695,780	224,572,310
Missouri	54,347	54,347
Montana	294,701,252	290,700,975
Nevada	1,090,635	1,625,985
New Mexico	7,099,842	7,028,670
North Carolina	582,209	703,775
Oregon	545,859	415,803
Tennessee	17,809,442	17,979,317
Texas	51,377	51,377
Utah	50,329,119	56,593,576
Vermont	11,694	240,315
Washington	290,823	235,030
Wyoming	106,177	24,000
Totals	917,805,682	916,971,387

shown the production by States, this being given in two columns, showing the smelter and the mine production. There was an increase in Arizona in 1906 of nearly 30,000,000 lb. California likewise showed an increase as compared with the previous year, which, however, was below the average of several preceding years. In Montana, however, there was a decrease. The new camps in Nevada increased largely and this is likewise true of Alaska. The computed consumption in 1906 was figured at 677,434,937 lb., and the stocks at the refineries on January 1, 1907, were figured at 92,470,792 lb. An interesting estimate is made showing that the use of copper in 1906 for electrical purposes was practically half the consumption; brass manufacturers used 30 per cent.; in rolling mills and the manufacture of sheet copper 5 per cent. was used, and for miscellaneous uses, principally castings, 15 per cent.

The open hearth steel plant, sheet and tin plate mills of the Follansbee Brothers Company, Follansbee, W. Va., started up in full in all departments January 13, and will continue in full operation for the next two or three weeks at least.

Four sheet mills in the plant of the Allegheny Steel Company, Avenue, Pa., were put in operation on Monday, after being closed since December 21. The plate mill, bar mill and three of the open hearth furnaces were started last week.

A. M. Ryers & Co., Inc., Pittsburgh, manufacturers of iron pipe, will make some large additions to their plant providing the City Councils will vacate a street alongside the plant, about 600 ft. in length. In case councils refuse to vacate this street, the firm states that it will remove its plant to Girard, Ohio, locating it near the Mattie Furnace, which it owns and operates.

NEWS OF THE WORKS.

Iron and Steel.

Furnace A of the Northwestern Iron Company, Mayville, Wis., which was blown out October 27, 1907, started again January 5. Both furnaces of this company are now active.

Earlston Furnace of Joseph E. Thropp, at Earlston, Pa., was blown out this week for repairs. It will not resume until business conditions have improved. The No. 2 Saxton Furnace of the same interest will continue in operation for the present.

Watts Furnace of the Virginia Iron, Coal & Coke Company, Bristol, Va., was blown out the latter part of December.

General Machinery.

Pawling & Harnischfeger, Milwaukee, Wis., after a partial shutdown for two weeks, have resumed operation, in all departments, but with a greatly reduced force, and in some departments on short time.

The Straubel Machine Company, Green Bay, Wis., heretofore a partnership, has been incorporated with a capital of \$25,000. The company manufactures a line of marine gasoline engines and does a general machine shop business. The incorporators are L. A. Straubel, E. F. Straubel and Ed. Straubel.

The Noye Mfg. Company, Buffalo, N. Y., manufacturer of flour mill and general machinery, has added to its lines a department for the manufacture of automobile parts, including three types of radiators—vertical and flat tube, coil and honeycomb—and pressed steel hoods, dashes, tool boxes and battery boxes. Additional machinery and facilities for the accommodation of this department have been installed.

Foundries.

The Keystone Steel Foundry Company has been granted a Pennsylvania charter and will operate a foundry at Avonmore, Pa., for the manufacture of steel castings. The new company has a capital of \$150,000, \$75,000 of which is held by Joseph H. Sauers, whose foundry has been taken over.

C. M. Whitney of the Whitney Iron Works has been appointed receiver for the Schwartz Foundry Company, New Orleans, La.

The Wisconsin Malleable Iron Company, Milwaukee, Wis., whose works were shut down December 31, resumed operation January 6.

After a shutdown of one week, which was occupied in inventory work, the plant of the Central Foundry Company, Vincennes, Ind., has been started up and will continue to run on an average of three days a week, as it has been doing for some time.

Power Plant Equipment.

The Westinghouse Machine Company, East Pittsburgh, has received an order from Kingan & Co., Indianapolis, for a 750-hp. steam turbine-generator set; 900-hp. turbo-generator for shipment to South Manchester, Conn.; New York, New Haven & Hartford Railroad, large steam engine to be used in a pumping station. The company has also received an order for a gas engine for shipment to Japan. In a letter received recently, accompanying an order for gas engines, the Japanese purchaser stated that although it did not require the engines until fall the order was placed because it could secure better prices and feared that the works would be so busy at that time that it would be unable to get prompt delivery.

The Sullivan Electric Light & Power Company and the Sullivan Heat, Light & Power Company have been merged into the Sullivan Lighting Company, at Sullivan, Ind. The capital stock is \$50,000.

The Struthers-Wells Company, Warren, Pa., manufacturer of gas engines, had a very large increase in its business during the year just closed. The company has recently opened a branch office at 310 House Building, Pittsburgh, to take care of its increasing business in the Pittsburgh District. The office is in charge of P. F. Heggarty, who has been connected with the company for nine years. Among recent installations of Warren gas engines were the following: One 180-hp., direct connected to generator, Ohio State University, Columbus, Ohio; one 600-hp., direct connected to generator, Kittanning & Leechburg Street Railway Company, Kittanning, Pa., second engine installed; two 125-hp. and one 100-hp., to drive generators, Ridgway Electric Light & Power Company, Ridgway, Pa.; one 110-hp., to drive generator, Corry & Columbus Street Railway Company, Corry, Pa.; one 125-hp., municipal water works, Ridgway, Pa.; two 300-hp., belted to gas compressors, Manufacturers Gas Company, McKinley, Pa.; two 300-hp., Potter Gas Company, Coudersport, Pa.; one 250-hp., to drive generator, Citizens Electric Light & Power Company, Lorain, Ohio; one 250-hp. and one 125-hp., Electric Light & Power Company, Kane, Pa.; two 80-hp., direct connected to generators, Franklin Railway Supply Company, Franklin, Pa.; four 600-hp., direct connected to alternating current generators, American Plate Glass Company, Kane, Pa.; also one 200-hp. and one 110-hp.; two 125-hp., direct connected to 60-cycle alternating current generators, American Fork & Hoe Company, Ashtabula, Ohio.

The Bristol Gas & Electric Company, Bristol, Tenn., in-

tends to spend about \$100,000 in making improvements to its plant, to include the installation of a coke plant, 500 hp. turbines, boilers, &c. S. M. Vance is superintendent.

Fires.

The tipple, engine and boiler house of the Houston County Coal & Mfg. Company at its mines at Wooters, near Crockett, Texas were burned January 3.

The plant of the Holland Launch & Engine Company, Holland, Mich., was damaged \$10,000 by fire January 8.

The machine shop, blacksmith shop and supply house of the Whitney Reduction Company, Whitney, N. C., were damaged \$15,000 by fire January 6.

The building on Fifth avenue, New York, partly occupied by the Adam Happel Iron Works and the Edelmann Iron Works, was burned January 11.

The plant at the ore mines of the Bellefonte Furnace Company, Bellefonte, Pa., was burned January 11, the loss being about \$20,000.

The plant of the William H. Page Boiler Company, Norwich, Conn., was burned January 14, the loss being about \$50,000.

Hardware.

After having been in course of construction for a year and a half, the new factory of the Glidden Varnish Company, Cleveland, Ohio, is entirely completed and is in full operation, and the old factory, which has been the home of the company since it was organized in 1874 as Glidden, Brackett & Co., is idle for the first time in its history. This plant, which has cost over \$500,000, occupies 17 acres and is built entirely of brick, concrete and steel, is one of the largest and most perfectly appointed exclusive varnish factories in the world, both in capacity for making and for storing varnish. It also has a very large and complete grinding department where Jap-A-Lac is made. The company is naturally proud of its new home, and extends an invitation to visitors to Cleveland who are interested to call and inspect the plant.

The Chas. R. Morse Mfg. Company, Chicago, Ill., has recently constructed for the Hazel-Atlas Glass Company, Clarksburg, W. Va., and Washington, Pa., four special Morse calculators to be used at its four plants for figuring tonnage of glass products. It is stated that the calculators have already made hundreds of dollars for the glass company by reducing the time in figuring this work.

Miscellaneous.

J. H. Wagenhorst & Co., Youngstown, Ohio, manufacturers of the Wagenhorst automatic electric blue printer, have recently made sales of these machines as follows: The Kelley Company, Birmingham, Ala.; Universal Portland Cement Company, East Chicago, Ill.; State College of Kentucky, Lexington, Ky.; University of Arkansas, Fayetteville, Ark.; Michelin Tire Company, Milltown, N. J.; Barber-Colman Company, Rockford, Ill.; Dake-American Steam Turbine Company, Grand Rapids, Mich.; Haskell-Barker Car Company, Michigan City, Ind.; Geo. L. Kopp, Pittsburgh, Pa. The company is particularly elated over the sale to the Barber-Colman Company, as this was secured after a trial of 30 days in competition with another type of electric blue printing machine.

The Brush-McLaren Motor Company, Newark, N. J., has been incorporated, with a capital stock of \$50,000, to deal in automobiles, by Thayer McLaren and others.

Zahnisher Brothers, Waynesburg, Pa., machinists and blacksmiths, are building an addition to their works, to be used as a warehouse for carrying a larger stock of bar iron for their retail trade.

Preparatory to the building of its new wagon factory the Davenport Wagon Company, Davenport, Iowa, is tearing down old buildings and clearing the site for construction work on the new plant, which will be begun in the spring. The company makes a specialty of all steel farm wagons.

The Old Colony Trust Company's offices in the Ames Building and the office building of the Thorndike Estate, both in Boston, are being equipped with fans manufactured by the Massachusetts Fan Company, Watertown, Mass. All of the fans are to be electrically driven by direct connected motors.

The plant of the American Can Company, Davenport, Iowa, resumed operation in part on January 2 after a several weeks shut down. Additional lines will be put in operation as business demands until the entire factory is again running.

The Harry Brothers Mfg. Company, New Orleans, La., has been incorporated, with a capital stock of \$100,000, and has taken over the business and plant of the former company of the same name. The company will continue the manufacture of corrugated galvanized steel cisterns and culverts. T. C. Harry is president; H. C. Harry, vice-president; W. H. Chandler secretary and treasurer, and J. S. Cave, general manager.

The Fire Protection & Equipment Company has been organized at Indianapolis, Ind., for the manufacture of sprinkler equipment, iron doors, wire glass and other fire protection devices. Thornton M. Goodloe, Lemcke Building, is manager.

The American Engineering Company, Indianapolis, Ind., has been reorganized and has been incorporated as the Ameri-

can National Corporation. It has the same officers as the former company, with the exception of the secretary, W. H. Kirshner taking the place of E. W. Barrows. The capital stock of the American Engineering Company was \$200,000; the capital stock of the succeeding company is \$50,000. The corporation will build electric and interurban lines and audit the accounts and appraise electric and interurban lines. Chas. N. Wilson, New York, heads the new corporation, as he did the old; W. W. Critchlow is vice-president. Other directors are Chas. N. VanCleve and F. S. Hines.

The Krell Auto-Grand Piano Company of America has been organized at Connersville, Ind., with \$1,000,000 capital stock, to manufacture an auto-grand piano. Albert Krell, Newcastle, Ind., is president. The company will establish its plant in the buildings formerly used by the Indiana Furniture Company.

Trade Publications.

Fans and Motors.—Diehl Mfg. Company, Elizabethport, N. J. Bulletins as follows: No. 18, direct current electric ceiling fans; No. 19, direct current universal fans, and supplement to No. 19, universal oscillator fans; No. 40, belt fans for sewing machine power tables; No. 54, superseding No. 53, direct current sewing machine motors; No. 55, alternating current sewing machine motors; No. 63, superseding No. 62, motors and exhaust fans; No. 72, superseding No. 71, alternating current desk, ceiling and bracket fans; No. 75, direct current small power motors; No. 101, superseding No. 100, types D and E motors; No. 110, motors for driving sewing machine power tables; No. 111, direct current small printing press motors, and No. 150, types F and FC motors and generators. Price-list No. 219 covers parts of Diehl electric fans listed in bulletins Nos. 18 and 19.

Cupola Record Cards.—B. F. Sturtevant Company, Hyde Park, Mass. Daily cupola record cards for the month of January, 1908, offered for free distribution to foundries interested. Opposite each day are spaces for the quantity of each material charged, the total melt, waste of the sprues, pig bed, average blast pressure in ounces, time the blast went on, time the bottom was dropped, total good castings, and the good castings in the per cent. of melt. The idea is that it will be of value to the foundry to keep a record of the cupola and blower performance. The reverse side of the card shows a sectional view of the Sturtevant high pressure blower, with attention directed to the features of its operation which are of advantage, and also a cross section of a foundry with a Sturtevant high pressure blower installed for furnishing blast to the cupolas.

Electric Winches.—Lidgerwood Mfg. Company, 96 Liberty street, New York City. Bulletin No. 21. Pertains to the Lidgerwood patent slip-drum hauling-in winch for handling heavy car floats at car ferry slips, which was designed for the use of the Pennsylvania Railroad at its yards and docks at Greenville, N. J., and South Brooklyn.

Ventilators.—Howard & Morse, 45 Fulton street, New York City. Catalogue No. 160. Size 6 x 9 1/4 in.; pages 24. Illustrates and describes the Blackman ventilator for exhaust and low pressure service, giving price-lists of Blackman ventilator wheels, special blades, and fans without frames, and power, volume and dimension tables. Duplex cone fans and Blackman-Solano steam ventilators are similarly dealt with. A long list of installations is appended.

Motors.—Century Electric Company, 404 North Fourth street, St. Louis, Mo. Bulletin No. 8. Relates to the company's single-phase alternating current motors. The various parts are described separately, and illustrations show the different types, including vertical and variable speed motors. Horsepowers, code words, speeds, dimensions, &c., are given in tabular form.

Feed Water Heaters.—Harrison Safety Boiler Works, Philadelphia, Pa. Pamphlet 292. Gives information concerning the heating of boiler feed water where the main engine is run condensing, and the superior economy of steam driven as compared with electrically or mechanically driven auxiliaries, setting forth many advantages which are obtained by using the company's Cochrane heaters. A description is included of two Cochrane horizontal, cylindrical, open feed-water heaters rated at 6000 hp. each for heating boiler feed water in a street railroad power plant.

Emery Wheels and Grinders.—Northampton Emery Wheel Company, Leeds, Mass. Catalogue No. 45. Size 6 x 9 in.; pages 80. Gives illustrations, specifications and prices of the company's emery wheels and emery wheel machinery, including various types, sizes and grades of every and corundum wheels, and oil and foundry rub stones, bench grinding machines, floor machines, leg machines, bench and floor water tool grinders, surfacer and plain grinders, band wheel and stove plate grinders, disk and cup wheel automatic knife and shear blade grinders, buffing and polishing lathes, strapping machines, countershafts, Turkish emery, diamond tools and Huntington emery wheel dressers.

Seamless Flues.—Detroit Seamless Steel Tubes Company, Detroit, Mich. Circular. Pertains to Detroit seamless locomotive flues, made from cold drawn open hearth steel.

The Iron and Metal Trades

The improvement in the financial situation is reflected by a better feeling in the Iron trade, but as yet there has been little increased buying, except in Pig Iron.

The Cast Iron Pipe manufacturers, East and West, have been buyers on a fairly large scale, one shop in northeastern Ohio taking upward of 10,000 tons and makers in the Philadelphia District contracting for a somewhat larger quantity. It is understood that these sales were below the figures which the majority of the furnaces are quoting, but the principal question, not yet settled, is whether these transactions clean up the Iron available at concessions. The offerings of Southern Iron at \$13 for No. 2 Birmingham, do not seem to have ceased entirely. An interesting subject which is now under discussion is the differential between Basic and Bessemer Pig, which affects the Central West more particularly.

Generally speaking, new orders for Finished Iron and Steel are still coming in very slowly, but there is more interest in the markets, and better things are hoped for in the near future.

The Steel Rail business is very light, and contractors for Structural Material are still holding back. In Chicago 2200 tons of bridge material were bought by the St. Paul road, while bids are going in for two bridges at Nashville, calling for 3000 tons. In the Pittsburgh District there may come up in the near future the contract for 16,000 tons for the Pittsburgh & Lake Erie bridge at Beaver, Pa. The Plate mills are only slightly employed, and there is some shading of prices going on.

In the Bar trade the reduction of Iron Bars to the 1.40c., base, Pittsburgh, by Western manufacturers, caused largely by the low prices of Scrap, is creating uneasiness, particularly since even that base price has not been adhered to. The makers of Steel Bars are facing the serious problem of maintaining the present 1.60c. base price in the face of that competition. While Iron and Steel largely occupy distinct fields, so wide a difference must divert some tonnage from Steel to Iron.

The recent reduction in the price of Sheets has led to only moderate increase in the sales, while, on the other hand, bookings in Tin Plate have been better. This is the season in which a considerable number of consumers enter their spring orders, and that they have done again, to a moderate extent.

While prices for Steel Merchant Pipe are being firmly held, there is some shading in Iron Merchant Pipe. It is not likely that a readjustment in prices of Pipe will be undertaken until it becomes clear that there is a good volume of business which may be tempted by a reduction.

The Tin market is firmer, the price having advanced 1c. per pound to 27½c. Electrolytic Copper, for domestic consumption, is being held at 14c., with a moderate business. Lead is up to 3.75c., New York. The price of Aluminum, which was 36c., has been reduced to 33c. Overproduction is telling in this branch of the metal industry.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Jan. 15, Jan. 8, Dec. 18, Jan. 16,
1908. 1908. 1907. 1907.

PIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	\$18.25	\$18.25	\$18.25	\$26.50
Foundry No. 2, Southern, Cincinnati	16.25	16.25	17.00	26.00
Foundry No. 2, Local, Chicago ..	18.00	18.00	18.25	25.50
Bessemer, Pittsburgh	18.90	18.90	19.90	22.85
Gray Forge, Pittsburgh	16.90	17.40	18.40	22.35
Lake Superior Charcoal, Chicago	22.50	22.50	23.50	27.00

BILLETS, &c., Per Gross Ton:				
Bessemer Billets, Pittsburgh ..	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh	30.00	30.00	30.00	36.50
Open Hearth Billets, Phila.	30.00	30.00	30.00	33.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	37.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:				
Steel Rails, Melting, Chicago ..	12.00	12.00	12.00	18.00
Steel Rails, Melting, Phila.	11.50	11.50	11.50	19.00
Iron Rails, Chicago	15.00	15.00	15.50	27.00
Iron Rails, Philadelphia	16.50	16.50	17.50	27.50
Car Wheels, Chicago	19.00	19.00	22.00	25.00
Car Wheels, Philadelphia	19.00	19.00	19.00	23.00
Heavy Steel Scrap, Pittsburgh ..	12.50	....	12.50	18.75
Heavy Steel Scrap, Chicago	10.75	10.75	11.50	17.00
Heavy Steel Scrap, Philadelphia	11.50	11.50	11.50	....

FINISHED IRON AND STEEL,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia.	1.75	1.75	1.75	1.93½
Common Iron Bars, Chicago	1.55	1.75	1.75	1.81½
Common Iron Bars, Pittsburgh.	1.40	1.60	1.55	1.80
Steel Bars, Tidewater, New York	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh	1.70	1.70	1.70	1.70
Beams, Tidewater, New York ..	1.86	1.86	1.86	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York ..	1.86	1.86	1.86	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.70	1.70	1.70	1.65
Skelp, Sheared Steel, Pittsburgh.	1.80	1.80	1.80	1.70

SHEETS, NAILS AND WIRE,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.50	2.50
Wire Nails, Pittsburgh	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh ..	2.50	2.50	2.50	2.45

METALS, Per Pound:				
Lake Copper, New York	14.00	13.87½	13.00	24.75
Electrolytic Copper, New York ..	13.87½	13.75	12.62½	24.50
Spelter, New York	4.70	4.40	4.25	6.90
Spelter, St. Louis	4.60	4.27½	4.15	6.75
Lead, New York	3.75	3.65	3.50	6.30
Lead, St. Louis	3.60	3.60	3.35	6.12½
Tin, New York	27.75	26.75	26.10	41.30
Antimony, Hallett, New York ..	8.75	8.75	8.50	24.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York ..	\$3.89	\$3.89	\$4.00	\$4.00

Chicago.

FISHER BUILDING, January 15, 1908.—(By Telegraph.)

An announcement of importance to the Wire and Nail trade was made on Monday by the American Steel & Wire Company, in which it was stated that the present prices of Wire products were reaffirmed, and that no reduction would be made for the spring trade. This action, while perhaps not in accordance with what was generally expected, will at least have a tendency to restore confidence in the general price level of such commodities. Underlying this action was the belief that a reduction of prices at this time would not be effective in bringing out any more business. The only decided change in prices of Finished Material during the week was a reduction of \$4 a ton made by the Western mills on Bar Iron, by which the price of 1.55c., Chicago, has been substituted for 1.75c., previously in effect. This change had been strongly foreshadowed by the continued decline of Old Material. The demand for Iron Bars has slightly improved, but Steel Bars are exceedingly quiet. There is not enough tonnage of either coming in to furnish more than intermittent employment for the mills. In Structural Material 2260 tons for railroad bridge work constituted the bulk of business taken by fabricators. Building structure projects, of which there are a few pending involving considerable tonnage, are slow in reaching closure. Railroad requisitions are still being carefully pruned, so that the market has but little support from this source, either for new Rail tonnage or miscellaneous material. The general inactivity of industrial operations is reflected in a greatly diminished demand for Light Rails and prices are

being shaded from \$1 to \$2 a ton from ruling quotations. The only notable transaction in Cast Iron Pipe is a contract for 3000 tons of Water Pipe for Tucson, Ariz. Not enough tonnage is coming in to keep the Pipe foundries in operation, and in consequence those that are running are piling up more or less stock. There is a little better movement in Pig Iron, but it has not reached significant proportions. Approximately 6000 tons have been placed during the week, in which is included one sale of 2000 tons of Basic to a local consumer. Price conditions have not changed materially, there still being a spread of 50c. a ton or more between the prices nominally quoted by different interests.

Pig Iron.—The principal transaction of the week was a sale of 2000 tons of Basic, which was taken by a local consumer, for delivery within the first quarter. In addition to this there were orders placed aggregating 4000 tons, made up of various lots, which were supplied by Southern furnaces. The fact that practically all of this business covered deliveries extending through the first half would indicate a little stronger feeling of confidence among consumers concerning the future trend of the market. At the same time there continues to be more or less irregularity in prices, especially for immediate or nearby delivery. A number of the large interests are still quoting \$13.50, Birmingham, for No. 2 Foundry for first half Iron, and some sales have been made at this figure. On the other hand, Iron continues to be offered at \$13, Birmingham, but it is understood that this price is generally regarded as chiefly applicable to deliveries inside the first quarter. It is likely that within the next two weeks the production of Northern Iron will still be further curtailed, as it is probable that the Zenith Furnace will be blown out. This will leave but one furnace, the Iroquois, running exclusively on Merchant Iron, in operation in this district. Consumers of Malleable Bessemer are seemingly not interested even to the extent of keeping in touch with the market through inquiries, and there is nothing doing in this grade. The following prices are for January, February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$22.50 to \$23.50
Northern Coke Foundry, No. 1.....	18.50 to 19.00
Northern Coke Foundry, No. 2.....	18.00 to 18.50
Northern Coke Foundry, No. 3.....	17.50 to 18.00
Northern Scotch, No. 1.....	19.00 to 19.50
Southern Coke, No. 1.....	17.85 to 18.35
Southern Coke, No. 2.....	17.35 to 17.85
Southern Coke, No. 3.....	16.85 to 17.35
Southern Coke, No. 4.....	16.35 to 16.85
Southern Coke, No. 1 Soft.....	17.85 to 18.35
Southern Coke, No. 2 Soft.....	17.35 to 17.85
Southern Gray Forge.....	15.35 to 15.85
Southern Mottled.....	14.85 to 15.35
Malleable Bessemer.....	18.50 to 19.00
Standard Bessemer.....	21.00
Jackson Co. and Kentucky Silvery, 6 %	28.40 to 28.90
Jackson Co. and Kentucky Silvery, 8 %	30.40 to 30.90
Jackson Co. and Kentucky Silvery, 10 %	32.40 to 32.90

(By Mail.)

Billets and Rods.—There is practically no business being done in Forging Billets. Quotations continue to be nominally held at \$33 to \$34, Chicago. There is likewise no movement in Wire Rods, on which \$34, Pittsburgh, is also nominally quoted.

Rails and Track Supplies.—None of the looked for tonnage which it was predicted would begin to come out after the turn of the year has yet made its appearance. The Rail mill of the Illinois Steel Company is still running, but unless specifications now in hand are soon reinforced with new offerings they will not suffice to keep it in operation many weeks longer. There is but little tonnage in Light Rails coming out, and quoted prices continue to be shaded from \$1 to \$2 a ton. Orders for Track Supplies are extremely light in volume, being confined closely to actual present needs. We quote as follows: Angle Bars, accompanying Rail orders, 1907 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 1.90c. to 2c., according to delivery; Track Bolts, 2.40c. to 2.50c., base, Square Nuts, and 2.55c. to 2.65c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb. sections, \$30; 20-lb., \$31; 16-lb., \$32; 12-lb., \$33, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

Structural Material.—Among the contracts closed during the week were about 2260 tons of railroad bridge material let by the Chicago, Milwaukee & St. Paul; 1900 tons of this were awarded to the McClintic-Marshall Construction Company, and 360 tons to the Strobel Steel Construction Company. The general contract for the Hotel Anthony, Fort Wayne, Ind., including 600 tons of Structural Material, was let to Henry Hilgermann, a local contractor. It is understood that 445 tons for the Seventh Regiment Armory will be let this week, and bids are being taken on 350 tons for an addition to the Board of Trade Building, Duluth, Minn. A building being constructed by the Meyer & Simon Mfg. Company, Kansas City, Mo., will require 400 tons, on which bids have been made. Inquiries for the week developed but little prospective tonnage. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger

than 15 in., 1.98c.; Zees, 2 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

Plates.—New business is limited to emergency orders, which consist almost wholly of small lots required for the completion of work in hand and stock assortments. The large industrial plants using Plates, such as car works and boiler shops, have but little work, either immediate or prospective, and are consequently neither specifying liberally on existing contracts nor are they interested in tonnage for forward requirements. Shipments from store stocks are correspondingly light. Prices are reasonably firm, save for occasional concessions of from \$1 to \$2 a ton made by some mills from ruling prices on desirable specifications. We quote for shipment from mill as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.20c. to 2.30c.; from 72 to 96 in. wide, 2.30c. to 2.40c.; 3-16 in. up to 60 in. wide, 2.30c. to 2.40c.; 72 in. wide, 2.50c. to 2.65c.; No. 8 up to 60 in. wide, 2.35c. to 2.45c.; Flange and Head quality, 0.25c. extra.

Sheets.—So far the recent reduction of prices has not been followed to an appreciable extent by an increase in tonnage offered. A few more inquiries have been coming in, but they include no large tonnage that would indicate a decided improvement in consumption. Store stocks are moving slowly, buying being for immediate use. There is no disposition in any quarter, as yet, to increase stocks. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 to 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c. Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c. Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

Bars.—The chief feature of interest centers in the action taken last week by the Bar Iron mills, which resulted in a reduction of \$4 a ton on Iron Bars, making the price 1.55c., Chicago. In response to this concession there has been a slight increase in the number of orders received during the week, but in the aggregate the tonnage offered is not sufficient to keep the mills in operation full time. Specifications against contracts for Steel Bars are still being withheld, and there is very little new business being placed. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.55c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

Boiler Tubes.—Reflecting the inactivity in boiler construction, Merchant Tubes are moving slowly. There is no buying for anything beyond what is needed for immediate use. Requirements for the replenishment of jobbers' stocks are exceedingly light and the demand for Locomotive Tubes corresponds to the policy of extreme retrenchment now universally enforced by the railroads. Mill quotations for future delivery, on the base sizes, are as follows: 2½ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.....	.35	.35	.35
1½ to 2¼ in.....	.50	.35	.35
2½ in.....	.52½	.35	.35
2½ to 5 in.....	.60	47½	47½
6 in. and larger.....	.50	.35	..

Merchant Pipe.—It is clear from the character of orders being placed that the demand is restricted to requirements for immediate use and stock assortments. The past week has, however, brought out more inquiries and a slightly increased volume of business, but there is no disposition shown by jobbers or consumers to contract ahead. The usual seasonable dullness in trade from store stocks is emphasized by present conditions and under the pressure of competition shipments from stock are being made at prices almost on a level with mill discounts. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago job-

bers quote 72 per cent. on Black Steel Pipe, $\frac{3}{4}$ to 6 in. About four points advance above these prices is asked for Iron Pipe.

Merchant Steel.—While there has been no notable increase in mill tonnage on specifications, there are indications pointing to a better feeling among consumers, which, it is hoped, will a little later result in distinct improvement. What new business is received is comprised of straggling orders of small tonnage, which add but little to the aggregate. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to $1\frac{1}{2}$ x $\frac{1}{2}$ in., 1.93c.; Iron Finish, $1\frac{1}{2}$ x $\frac{1}{2}$ in. and larger, 1.78c., base; Channels for solid Rubber Tires, $\frac{3}{4}$ to 1 in., 2.28c., and $1\frac{1}{2}$ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46 $\frac{1}{2}$ c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7 $\frac{1}{4}$ c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

Cast Iron Pipe.—The contract for 3000 tons of 4 to 16 in. Water Pipe for a new conduit system at Tucson, Ariz., was at a letting held last week awarded to the United States Cast Iron Pipe & Foundry Company. In addition to this, approximately 1000 tons, including the municipal requirements of several small towns, was also closed. The most encouraging feature of the situation is found in an increasing number of inquiries from various sources, which, it is believed, represents needs that will result in purchases a little later on. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., \$32; 6 to 12 in., \$31; 16-in. and up, \$30, with \$1 extra for Gas Pipe.

Old Material.—Consumers are taking very little material of any kind, and notwithstanding the figures offered are not inclined to increase their stocks. It is strictly a traders' market, and transactions of a speculative nature constitute the bulk of the business. Some tonnage of this character moved during the week is reported to have brought prices slightly in advance of current quotations, but there has been practically no change in the actual level of prices. A large portion of the tonnage offered last week by the Santa Fé was disposed of in other markets, and it is believed to have brought close to quoted prices. The Baltimore & Ohio Railroad is this week offering 6700 tons, in which there are 2500 tons of Rerollers and a little more than 1000 tons of No. 1 Wrought. Until there is a better consumptive demand it is difficult to see how there can be a substantial rise in values. We quote per gross ton, f.o.b. Chicago, as follows:

Old Iron Rails.....	\$15.00 to \$15.50
Old Steel Rails, rerolling.....	12.00 to 12.50
Old Steel Rails, less than 3 ft.....	12.00 to 12.50
Relaying Rails, standard sections, subject to inspection.....	22.00 to 25.00
Old Car Wheels.....	19.00 to 19.50
Heavy Melting Steel Scrap.....	10.75 to 11.25
Frogs, Switches and Guards, cut apart.....	11.00 to 11.50
Mixed Steel.....	8.50 to 9.00

The following quotations are per net ton:

Iron Fish Plates.....	\$13.00 to \$13.50
Iron Car Axles.....	15.50 to 16.00
Steel Car Axles.....	15.00 to 15.50
No. 1 Railroad Wrought.....	10.75 to 11.25
No. 2 Railroad Wrought.....	9.50 to 10.00
Railway Springs.....	10.00 to 10.50
Locomotive Tires, smooth.....	15.00 to 15.50
No. 1 Dealers' Forge.....	8.50 to 9.00
Mixed Bushing.....	7.50 to 8.00
Iron Axle Turnings.....	6.75 to 7.25
Soft Steel Axle Turnings.....	6.75 to 7.25
Machine Shop Turnings.....	6.75 to 7.25
Cast Borings.....	4.75 to 5.25
Mixed Borings, &c.....	4.75 to 5.25
No. 1 Mill.....	7.00 to 7.50
No. 2 Mill.....	6.00 to 6.50
No. 1 Rollers, cut to Sheets and Rings.....	7.00 to 7.50
No. 1 Cast Scrap.....	12.75 to 13.25
Stove Plate and Light Cast Scrap.....	11.50 to 12.00
Railroad Malleable.....	10.00 to 10.50
Agricultural Malleable.....	9.00 to 9.50
Pipes and Flues.....	8.00 to 8.50

Metals.—The market is practically stationary so far as prices are concerned, and beyond a hand to mouth buying in small lots there is no movement in Copper. The number and character of inquiries received give no promise of an impending change in the situation, since users are content to buy in small quantities as the Metal is needed. Other Metals remain unchanged both as to price and demand. Old Metals are dull and inactive. We quote as follows: Casting Copper, 14 $\frac{1}{4}$ c.; Lake, 14 $\frac{1}{4}$ c. to 15c., in car lots for prompt shipment; small lots, $\frac{1}{4}$ c. to $\frac{3}{4}$ c. higher; Pig Tin, car lots, 29 $\frac{1}{4}$ c.; small lots, 30 $\frac{1}{4}$ c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2 $\frac{1}{4}$ c. per 100 lb. higher; Spelter, 4.60c.; Cookson's Antimony, 13c., and other grades, 11c. to 11 $\frac{1}{2}$ c.; Sheet Zinc is \$7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13 $\frac{1}{2}$ c.; Heavy Copper, 13 $\frac{1}{2}$ c.; Copper Bottoms, 12c.; Copper Clips, 12c.; Red Brass, 13c.; Yellow Brass, 10 $\frac{1}{2}$ c.; Light Brass, 6 $\frac{1}{2}$ c.; Lead Pipe, 3 $\frac{3}{4}$ c.; Zinc, 3 $\frac{3}{4}$ c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

The Great Western Iron & Metal Company, wholesale dealer in Scrap Iron, formerly at 303 South Halsted street,

Chicago, is now located in its new office and yards at 990 to 1001 North Fifty-first avenue.

Philadelphia.

PHILADELPHIA, PA., January 14, 1908.

The Iron and Steel market has been without particular feature. There has been some moderate buying of both crude and finished materials, and the trade on the whole is of the opinion that conditions will continue to improve, in a quiet way, until we have again reached a point where business can go ahead uninterruptedly. The readjustment of prices, in some instances, has had a favorable impression, and while it can scarcely be said that it has resulted in any great activity, neither can it be said to have held up business. Consumers who have but a small volume of business on their books are not likely to buy very extensively at any price, but will continue the policy of purchasing such tonnages only as are necessary for their immediate needs, and if any forward buying is done the practice has been to take only a small proportion of what the estimated requirement for the future will be. General business is beginning to feel the effect of curtailment policies to a greater extent, and it will, no doubt, require some time to get back to anything like normal conditions.

Pig Iron.—Buying continues on a moderate scale, there being no inclination on the part of melters to take any heavy tonnages for forward delivery. The readjustment of prices by practically all of the Eastern producers has been going on in an orderly fashion, and while many of the low quotations made previous to last week have either developed into orders or lapsed, a few still remain open. Sales therefore have been recorded recently at figures which apparently show more or less variation, but this has been almost entirely due to the readjustment policy. Sales of moderate lots of No. 2 X Foundry are noted at \$17.90 and \$18.25, delivered, the former being the old and the latter the new quotation. Practically all the sellers now hold prices firmly at the new basis and are making sales at those figures. There is also a disposition shown not to accept large tonnages for forward deliveries on this basis, as it is believed that until the market can be more fully tested there will be more or less uncertainty as to the future. Bids at lower figures on the part of buyers are being generally refused by sellers, who consider that, in view of the continued curtailment in production and the cost of manufacture on the present basis, even to-day's prices are too low. At the same time consumers in many instances do not consider present prices excessive, but the tendency on the part of the buyer continues on very conservative lines, and there is no doubt that consumers will hardly be much attracted by price conditions unless there is some material improvement shown in the demand for their various products. Sales during the week have been almost entirely confined to Foundry Irons. There has been some moderate buying of No. 1 X and No. 2 X at the new quotations, \$18.75, delivered, for the former, and \$18.25, delivered, for the latter. The tonnages, however, have not been large and range from 50 up to 500. Cast Iron Pipe manufacturers are still in the market for Iron for that class of work, but no heavy tonnages have been placed in this territory during the week. A few small lots were sold, however, for early delivery, at figures close to \$17.25, delivered. Forge Irons continue inactive. Mills in some cases have not yet resumed, while others are running on restricted output. Under the circumstances, therefore, buyers have not come into the market to any extent. Basic and Low Phosphorous Irons show no movement, melters being pretty well supplied and as a rule have accumulated considerable stocks during the recent depression. Southern Iron is quoted on the basis of \$13.50, furnace, for No. 2 X Foundry, but there has been practically no business done in this territory. Prices quoted below are those now named by the majority of Eastern producers for delivery in buyers' yards, Philadelphia and adjoining territory:

No. 2 X Foundry.....	\$18.25 to \$18.50
No. 2 Plain.....	17.75 to 18.00
No. 3 Foundry.....	17.25 to 17.50
Gray Forge.....	16.50 to 16.75
Basic.....	17.25
Low Phosphorous.....	24.50 to 25.00

Ferromanganese.—Business continues extremely light. Prices are still held at \$48 to \$49, Baltimore, but it is difficult to say what they would be if there was any demand for a good tonnage.

Steel.—There is absolutely no change in the Steel market. New business is very scarce and mills are putting no tonnage on their books. Plants are still idle, not enough specifications coming out to warrant starting. Prices are nominally unchanged, being still quoted at \$30 to \$31 for ordinary Rolling Steel and \$33 to \$35 for Forging Steel. Concessions could be had, however, on orders for round lots.

Plates.—A fair run of small orders, covering immediate needs of consumers, has come out during the week. There is an absence, however, of any large tonnage, and mills are

running at about half their capacity, although orders are expected to develop in the near future on several very fair propositions. Prices of Plates continue to be firmly maintained at the following quotations:

	Part Carload. Cents.	carload. Cents.
Tank, Bridge and Boat Steel.....	1.85	1.90
Flange or Boiler Steel.....	1.95	2.05
Commercial Firebox.....	2.05	2.10
Marine.....	2.25	2.30
Locomotive Firebox Steel.....	2.35	2.40
The above are base prices for $\frac{3}{4}$ -in. and heavier. ing extras apply:		
3-16-in. thick.....	The follow- Extra per 100 lb.	
Nos. 7 and 8, B. W. G.....	\$0.10	
No. 9, B. W. G.....	.15	
Plates over 100 to 110 in.....	.25	
Plates over 110 to 115 in.....	.05	
Plates over 115 to 120 in.....	.10	
Plates over 120 to 125 in.....	.15	
Plates over 125 to 130 in.....	.25	
Plates over 130 in.....	.50	
	1.00	

Structural Material.—No material change is to be noted in the demand. The business coming out continues of a miscellaneous character, and mills are fairly well occupied. Some pretty fair business in the way of Bridge Material is expected to come out, however, in the course of a few weeks. There has been no change in the price of Structural Material, the quotations of 1.85c. to 2c., according to specification, being fully maintained.

Bars.—The demand for Iron and Steel Bars is still very poor. Some few inquiries have come out, but the tonnage wanted has been comparatively small, neither consumers nor stores being inclined to buy for forward delivery. Prices are being fairly well maintained, 1.75c. being still quoted for Philadelphia and nearby delivery.

Sheets.—Orders have not been so plentiful during the week, and production at some of the mills has receded, so that plants are running at about 35 to 40 per cent. of their capacity. The outlook is not very encouraging, as consumers are not inclined to place orders for anything more than immediate requirements. Prices have been reduced, and the following quotations are now named for mill shipments in this territory, with a tenth extra for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.70c.; Nos. 25 to 26, 2.80c.; No. 27, 2.90c.; No. 29, 3c.

Old Material.—There has been practically no change in the market. Buying has been light and prices are largely governed by individual circumstances and are therefore hard to name. Sales of Low Phosphorus Scrap have been reported, however, at higher prices than heretofore quoted. We quote nominally for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory, about as follows:

No. 1 Steel Scrap and Crops.....	\$11.50 to \$12.00
Low Phosphorus.....	18.00 to 18.50
Old Steel Axles.....	18.00 to 18.50
Old Iron Axles.....	23.00 to 24.00
Old Iron Rails.....	16.50 to 17.50
Old Car Wheels.....	19.00 to 20.00
Choice No. 1 R. R. Wrought.....	14.00 to 14.50
Machinery Cast.....	15.50 to 16.00
Wrought Iron Pipe.....	11.50 to 12.00
No. 1 Forge Fire Scrap.....	10.50 to 11.00
No. 2 Light Iron.....	8.00 to 8.50
Wrought Turnings.....	9.00 to 9.50
Stove Plate.....	12.50 to 13.00
Cast Borings.....	7.00 to 7.50
Grate Bars.....	13.00 to 13.50

Coke.—The market continues quiet. Furnace Coke has been sold for delivery during the first quarter at \$2.05, at oven, or \$3.90, delivered in this territory, although some producers are holding for \$2.25 to \$2.50 at oven, but without getting much business. Foundry Coke is dull and is held at \$2.50 to \$3 at oven, but sales are very light. We quote about the following range of prices for deliveries in the Philadelphia territory:

Connellsville Furnace Coke.....	\$4.15 to \$4.65
Foundry Coke.....	4.65 to 5.15
Mountain Furnace Coke.....	3.90 to 4.25
Foundry Coke.....	4.35 to 4.85

Birmingham.

BIRMINGHAM, ALA., January 13, 1908.

Pig Iron.—A definite statement as to the status of the market is difficult to make. The recent inquiries and the sales which resulted have indicated a firmer basis, but the actual transactions recorded fail to materialize the expectation. The schedule of \$13.50 on a No. 2 Foundry basis, f.o.b. Birmingham, with a differential of 50c. per ton for lower grades, is being adhered to, and from the nature of quotations it would seem that the market was steady at these figures; yet it is known that a lot of something like 10,000 tons has been divided with the leading interests at figures possibly under \$13, and this price has even been done on one or more lots of 200 tons. On the other hand, small lots for immediate shipment have brought \$14, f.o.b. Birmingham, and the tonnage sold at \$13.50 is very significant, the latest sale reported having been a lot of 1500 tons. A lot of 1000 tons, No. 2 Soft, has been sold at \$13.25, Birmingham

delivery, and sales of carload lots have been made at from \$13.50 to \$14. Gray Forge has been offered at \$11.25, but there is apparently a disposition with producers who have any stock of this grade to sell at a greater differential than 50c. per ton on No. 2 quotations. The number of acceptances recently made by wire are considered good indications that prices are becoming more attractive and quotations on advanced deliveries are being made with some reluctance. Shipments against contracts, which were held up early in December, have been resumed in some cases, and indications favor a betterment of conditions in foundry trades. The Water Pipe plants, which are the leading consumers in the district, have resumed operation, and the local melt is considerably above that of some weeks past. Production has also increased, the Ironaton Furnace of the Alabama Consolidated Coal & Iron Company having been put in blast after a suspension of about three weeks. It is also authentically reported that additional capacity of the same concern will be put in operation within the next 30 days.

Cast Iron Pipe.—In view of the fact that lettings of consequence are believed to have been withheld as a result of the unsettled conditions of the Pig Iron market, recent developments in that line are very gratifying to producers, and an early revival of interest in the market is anticipated. The local plants of the United States Cast Iron Pipe & Foundry Company, after an idleness of about two weeks, have resumed operations and production is now close to normal. It is true that orders on the books consist principally of small lots and unfinished contracts, but it is believed that the present prices of raw material would admit of continued operation, even if an accumulation of stock resulted. Prices are nominal, and we quote as follows, per net ton, f.o.b. cars here: 4 to 6 in., \$29; 8 to 12 in., \$28; over 12-in., average, \$26, with \$1 per ton extra for Gas Pipe.

Old Material.—The recent inquiries have resulted in practically no sales for future delivery. Sales of carload lots for immediate shipment continue to compose the market, and while the indications are favorable for an increase in the demand later on, there is no evidence offered that any buying of consequence will result in the immediate future. Nominal quotations are as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$22.00 to \$22.50
Old Iron Axles.....	18.50 to 19.00
Old Steel Axles.....	17.00 to 17.50
Old Car Wheels.....	20.50 to 21.00
No. 1 Railroad Wrought.....	17.50 to 18.00
No. 2 Railroad Wrought.....	13.00 to 13.50
No. 1 Country Wrought.....	14.50 to 15.00
No. 2 Country Wrought.....	12.00 to 12.50
Wrought Pipe and Flues.....	13.50 to 14.00
Railroad Malleable.....	14.00 to 14.50
No. 1 Steel.....	13.50 to 14.00
No. 1 Machinery Cast.....	12.50 to 13.00
Stove Plate and Light Cast.....	10.00 to 10.50
Cast Borings.....	6.75 to 7.25

Cincinnati.

CINCINNATI, OHIO, January 15, 1908.—(By Telegraph.)

Under the stimulus of reports from the Pig Iron offices which indicate a steady increase in inquiry on iron for the first quarter and half, melters and the users of castings take a little more hopeful view of the situation. The week opened with marked activity among sellers, with inquiries principally from makers of Pipe, manufacturers of agricultural implements and malleable parts. Among the jobbing foundries there is still marked inactivity, and the local melt through this channel is not expected to improve much before March or April, while the sudden and coincidental wakefulness of Pipe makers, implement manufacturers and the like in the northern section of the Middle States shows a general bareness of yards and a belief that the minimum in costs has been reached, all of which in turn pleases the tool maker, for he knows his turn will come next. It is believed that restriction in manufacture has about reached its limit, both with the Iron makers and the tool producer, borne out by results of an excursion into northern Ohio on a big inquiry, told further on, and the attitude of some local manufacturers who are working their forces on machines for the stockroom.

Pig Iron.—A sphinx-like mystery has surrounded negotiations in the first good inquiry of the week coming from a Pipe maker in northeastern Ohio, whose requirements have footed up 13,500 tons of Nos. 2, 3 and 4 Foundry for February, March and April delivery. About 11 representatives spent considerable eloquence and submitted figures during Monday with apparently no result so far as those on the ground were concerned, the announcement being made that 10,800 tons had been negotiated privately at a price less than those in evidence, which were on a basis of about \$13, Birmingham, for Southern and \$16.50 at furnace for Northern. Later reports were to the effect that no sale had been made, and some representatives are still on the ground at this hour. The positive statement that the Cleveland interest usually concerned in sales to this melter had withdrawn from the contest contributed additional mystery. A

later rumor had it that the sale has been made, divided equally between Northern and Southern on a basis of \$16 and \$12.50 at furnace, which would make the Iron delivered figure at \$16.90 and \$16.85, respectively. Another good sale of the day which is to be accredited to the Eastern offices of a leading local interest is that of between 15,000 and 20,000 tons of Southern to analyze equal to Nos. 2, 3 and 4 Foundry on 90 day delivery, taking the product of a furnace, and on a basis of \$13, Birmingham delivery, to commence approximately at once. Along with these reports of close figuring comes the emphatic declaration of certain furnace representatives that \$13.50 is the very best figure for Southern No. 2 for first quarter and half, and that no business would be accepted at that figure for second half alone. There appears to have been a weakening in the Hanging Rock District, and it is generally conceded that \$16.50 may be done on any fair sized tonnage for spot delivery and first quarter. An inquiry from a northern Ohio malleable concern calls for 2000 tons first quarter; two from agricultural implement makers in the Chicago District ask for 2500 tons of Foundry; one Michigan manufacturer of implements is in the market for 1200 tons, equally divided between Northern and Southern No. 2 Foundry, first quarter and half; a Michigan stove manufacturer asks for prices on 2000 tons of Southern No. 2 for the last half; an inquiry from a northern Indiana concern asks for prices on 450 tons of Southern and 300 Northern for the second and third quarters. Local melters have just begun to feel the market, and inquiries aggregate about 2000 tons for early deliveries. For prompt shipment and balance of first quarter we quote f.o.b. Cincinnati, as follows, freight rates from Birmingham being \$3.25 and from the Hanging Rock District \$1.20:

Southern Coke, No. 1.....	\$16.75 to \$17.25
Southern Coke, No. 2.....	16.25 to 16.75
Southern Coke, No. 3.....	15.75 to 16.25
Southern Coke, No. 4.....	15.25 to 15.75
Southern Coke, No. 1 Soft.....	16.75 to 17.25
Southern Coke, No. 2 Soft.....	16.25 to 16.75
Southern Coke, Gray Forge.....	14.75 to 15.25
Southern Coke, Mottled.....	14.25 to 14.75
Ohio Silvery, 8 per cent. Silicon.....	23.20 to 23.70
Lake Superior Coke, No. 1.....	18.20 to 18.70
Lake Superior Coke, No. 2.....	17.70 to 18.20
Lake Superior Coke, No. 3.....	17.20 to 17.70

Car Wheel Irons.

Standard Southern Wheel.....	\$25.75 to \$26.25
Lake Superior Car Wheel.....	26.50 to 27.00

(By Mail.)

Coke.—A little better feeling may be noted in this market, but the announced reduction of wages by independent producers, affecting large shipments in the Pittsburgh and Eastern markets, has had little effect here. There is but little Foundry Coke going, and practically no furnace grades, and what buying there is still of the hand-to-mouth order. Inquiries cover the first half, and some sales of spot Connellsville Foundry Coke have been made at between \$2.75 and \$3, at oven. Connellsville Foundry is quotable at \$2.50 to \$2.75, at oven; Furnace, \$2.10 to \$2.25; Standard Virginia Foundry, \$2.25 to \$2.40; Furnace, \$2 to \$2.15. New River Foundry grades are quoted at \$2.69 to \$2.75, with no demand for Furnace.

Old Material.—Offerings from the railroads and other sources are light, and sales to consumers are lighter. Local Scrap yards are bursting with stocks, which have been accumulating during the extremely low market, and dealers are now close observers of the money situation and evidences of expansion and resumption in mills and foundries which will start inquiries for Melting Scrap and other material needed in building and trade reorganization. It is felt that this market has about reached the bottom, and that February 1 should bring some inquiries for good sized tonnages. Under the existing apathetic conditions the following prices are given as the most reliable obtainable, and are f.o.b. Cincinnati:

No. 1 R. R. Wrought, net ton.....	\$10.00 to \$11.00
Cast Borings, net ton.....	4.00 to 4.50
Steel Turnings, net ton.....	5.50 to 6.00
No. 1 Cast Scrap, net ton.....	12.00 to 13.00
Burnt Cast and Wrought, net ton.....	7.00 to 8.00
Old Iron Axles, net ton.....	14.50 to 15.50
Old Iron Rails, gross ton.....	14.50 to 15.50
Old Steel Rails, long, gross ton.....	10.00 to 11.00
Relaying Rails, 56 lb. and up, gross ton.....	22.00 to 23.00
Old Car Wheels, gross ton.....	16.00 to 17.00
Low Phosphorus Scrap, gross ton.....	13.50 to 14.50

Finished Iron and Steel.—Prices are well maintained, but business is quiet, with the sales agencies who do not anticipate any change before February 1, if then. Rumored pending reductions on Steel Bars are pronounced by agents of leading interests as without foundation, and officials say no change is contemplated. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.75c., with half extras; small lots from store, 1.90c., base, one-half extras. Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., base, half extras. Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2.10c. Blue Annealed Sheets (heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c.; No.

14, carload lots, 2.05c.; small lots from store, 2.40c.; No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.25c.; No. 12, carload lots 2c.; small lots from store, 2.35c. Sheets (light), Black, No. 28, carload lots, 2.65c. Galvanized Sheets, No. 28, carload lots, 3.70c. Tin Plate, 100-lb. basis, 112 sheets, 14 x 20, 3.70c., Pittsburgh. Steel Tire, 4-in. or heavier, carload lots, 1.95c., base. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.25c.

Pittsburgh.

PARK BUILDING, January 15, 1908.—(By Telegraph.)

Pig Iron.—Of the 19 merchant blast furnaces in the two valleys only 6 are active, namely, one Shenango, Girard, Ohio Iron & Steel, Brier Hill, Sharpsville and Youngstown Steel Company. It is probable that in the next week or two the Brier Hill, Ohio Iron & Steel and Sharpsville will go out. Sales of Pig Iron are very few and only small lots for actual needs. Reports are current of excessively low prices being made on Bessemer, Basic and Foundry Iron, but it is thought that most of these low prices emanate from dealers, as some of the furnaces that are out of blast absolutely refuse to quote. Bessemer Iron is nominally \$18, Valley furnace, or \$18.90, Pittsburgh, but none seems to be wanted even at this low price. Northern No. 2 Foundry is offered down to \$16.50, Valley furnace, with reports that lower prices have been named. Basic Iron is held at about \$17, Valley furnace, but lower quotations have been made, presumably by dealers. There is no demand for Forge Iron and it has been offered as low as \$16, Valley furnace, or \$16.90, Pittsburgh. A meeting of the blast furnace interests of the two valleys will be held in Youngstown January 21, at which labor matters will be taken up, and it is probable that a general reduction in wages will be made.

Steel.—The market is absolutely stagnant as regards sales, and we repeat \$28, Pittsburgh, as the nominal quotation on Bessemer and Open Hearth Billets, and \$29 on Sheet and Tin Bars. It is stated that Steel is being offered from some sources at lower prices, but this is not verified.

(By Mail.)

On nearly all lines of Finished Iron and Steel, specifications against contracts, while still calling for small lots, are somewhat better, and in some cases new business is showing an increase. It is the unanimous opinion that the crisis has been passed, and that recovery while slow will be steady. Last week many large employers of labor paid their men in all cash, for the first time since October. The daily press, however, continues to print reports of the starting up of idle plants which are largely untrue and misleading. The restriction of production of Pig Iron and Steel has possibly reached its minimum. The reduction in prices of Sheets and Tin Plates has stimulated demand to a slight extent and some of the idle mills are gradually being started. This has led to a better demand for Sheet and Tin Bars. Next week the Ohio Works of the Carnegie Steel Company will be started up on Sheet Bars and Billets, to a little more than 50 per cent. capacity, the Billets to be shipped to the American Steel & Wire Company at Newburg, while the larger part of the output of Sheet and Tin Bars will go to the New Castle mills of the American Sheet & Tin Plate Company. The Columbus, Mingo Junction, Bellaire, North Sharon and Donora works of the Carnegie Company are still idle, and may not resume for some time. Its Duquesne, Clairton, Shenango and South Sharon works are being operated to about 50 per cent. capacity. The Bessemer department at the Homestead Works is idle, while the Jones & Laughlin Steel Company is operating its Bessemer plant to about 50 per cent. capacity. The Bessemer plants of the Republic Iron & Steel Company and Youngstown Sheet & Tube Company are on this week. Low prices continue to be made on Coke. The feeling in the Scrap market is a little better, and it is believed that prices have about reached bottom.

Ferromanganese.—We note a sale of about 50 tons of foreign 80 per cent. to a local consumer on the basis of about \$48.50, Pittsburgh. We quote the market on foreign 80 per cent. at \$48.50 to \$49, Pittsburgh.

Muck Bar.—In the absence of sales, we quote best grades of Muck Bar, made from all Pig Iron, at, nominally, \$28 to \$29, Pittsburgh.

Wire Rods.—With no new demand, we quote Bessemer and Open Hearth Rods nominally at \$34, Pittsburgh. If any business was offering probably a lower price would be named.

Steel Rails.—None of the large roads has yet come in the market, so that new business in Standard Sections is still very small, the Carnegie Steel Company having taken only about 1000 tons last week. The demand for Light

Rails is fairly active, the Carnegie Company having booked in the past week about 1500 tons. It shipped out in December about 3500 tons of Light Rails, which is a good record when conditions are considered. Regular prices on Light Rails, which are still being shaded about \$2 a ton by the mills that reroll Rails, are as follows: 25 to 45 lb., \$30; 20-lb., \$31; 16-lb., \$32; 12-lb., \$34; 10-lb., \$36, and 8-lb., \$40. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

Plates.—New orders are for small lots only, and specifications against contracts are not satisfactory. Some of the larger mills are operating to 50 per cent. or less, and unless the demand soon improves will be running to lighter capacity before long. In some cases prices are being shaded by a few mills \$1 to \$2 a ton, regular quotations being as follows: Tank Plates, $\frac{1}{4}$ -in. thick, $6\frac{1}{4}$ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than $\frac{1}{4}$ -in. to and including 3-16-in.	
Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates..	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell grade of steel is abandoned.	

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Structural Material.—There is almost an entire absence of new bridge work, and no large buildings are under way in this district. The largest work in sight, and which will likely come up soon, is the Pittsburgh & Lake Erie Railroad bridge at Beaver, which, if put through, will take about 16,000 tons. None of the Structural mills is operating to more than 50 per cent. capacity, and some are running much lighter. There is no trouble whatever in getting prompt deliveries. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x $\frac{1}{4}$ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3 $\frac{1}{2}$ in., 1.80c.; Tees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—The recent reduction in prices has stimulated demand to some extent. The American Sheet & Tin Plate Company has started up some of its Sheet mills that were idle, the Follansbee Brothers Company's works at Follansbee, W. Va., is on full this week, with fair prospects, and some of the other independent Sheet mills are operating more steadily, while still others are getting ready to start up to partial capacity. Regular prices are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets \$1.75 per square and Galvanized Roofing Sheets, No. 28, \$3.10 per square for 2 $\frac{1}{2}$ -in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

Tin Plate.—The demand has already shown betterment as a result of the recent price reduction, and the percentage of active capacity among the Tin Plate mills is larger now than on January 1. The Shenango Works of the American Sheet & Tin Plate Company at New Castle, which has 30 hot mills, will be on full this week, after being closed for some months. The New Castle Works is expected to be soon running full, and some of the independent Tin Plate concerns are running to larger capacity than two weeks ago. We quote at \$3.70 for 100 lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

Iron and Steel Bars.—The action of the Western Bar Iron mills in reducing prices on Iron Bars to the basis of 1.40c., Pittsburgh, for Western shipment, will not affect prices on Steel Bars for the present at least. Many in the trade believe that the reduction in prices of Iron Bars at this time was a mistake. It is feared that it will not stimulate demand for the present at least, but may have

the opposite effect of making customers hold off in the hope of still lower prices. New demand for both Iron and Steel Bars is very light, and specifications against contracts are coming in sparingly. None of the Bar mills is operating to full time, some being closed entirely, while others are running to one-third capacity, or even less. We quote Steel Bars at 1.60c. and Iron Bars at 1.40c., Pittsburgh, for Western shipment, and 1.55c. for delivery in the Pittsburgh District.

Spelter.—The recent reduction in prices of Galvanized Sheets is expected to lead to a better demand for Spelter. For this reason the market is firmer, prime grades of Western Spelter being held at about 4.15c., St. Louis, equal to 4.27 $\frac{1}{2}$ c., Pittsburgh.

Hoops and Bands.—There is no new business of any moment. Consumers are specifying only for such tonnage as they absolutely need. Quotations are nominally unchanged.

Spikes.—The mills making Spikes are practically without business and are either closed entirely or running to half capacity or less. We quote Railroad Spikes at \$1.85 to \$1.90, and smaller sizes at \$1.95 to \$2 per 100 lb., f.o.b. Pittsburgh.

Merchant Steel.—New business is stagnant, the implement makers specifying for very small lots for actual needs. In Shafting the demand is lifeless, and it is stated that official discounts are being more or less shaded. Nominal quotations in the absence of business are as follows: Cold Rolled Shafting at 54 per cent. off in large lots and 48 per cent. off in carload lots, delivered in base territory; Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

Merchant Pipe.—The subcommittee on Pipe and Tubular Products met in this city yesterday, and it was decided to make no change in prices for the present. Specifications against contracts, while still calling for small lots, are coming in a little better, and new demand is also reported as showing some improvement. New tonnage and specifications at present represent about 30 per cent. of the capacity of the leading mills. Prices on Steel Pipe are firm and unchanged, but on Iron Pipe continue to be more or less shaded. The net discount on Steel Pipe to the large trade on $\frac{3}{4}$ to 6 in. is 74 and 5 per cent. off list, while on Iron Pipe, $\frac{3}{4}$ to 2 in., 71 and 5 per cent., and over 2 to 6 in., 70 and 5 per cent. are quoted. Discounts on Steel Pipe are as follows:

	Merchant Pipe.		Jobbers, carloads.	
	Steel.		Steel.	
	Black.	Galv.	Black.	Galv.
$\frac{1}{8}$ to $\frac{3}{4}$ in.....	65	49		
$\frac{3}{8}$ in.....	67	53		
$\frac{1}{2}$ in.....	69	57		
$\frac{3}{4}$ to 6 in.....	73	63		
7 to 12 in.....	70	55		
Extra strong, plain ends:				
$\frac{1}{8}$ to $\frac{3}{8}$ in.....	58	46		
$\frac{3}{8}$ to 4 in.....	65	53		
$\frac{1}{2}$ to 8 in.....	61	49		
Double extra strong, plain ends:				
$\frac{1}{2}$ to 8 in.....	54	43		

To the large trade all above discounts are subject to 1 point on the base, and 5 per cent. on the net.

Boiler Tubes.—New business is still very light, and on Railroad Tubes is practically stagnant. Discounts on Merchant Tubes are more or less shaded and are as follows:

	Boiler Tubes.	
	Iron.	Steel.
1 to 1 $\frac{1}{2}$ in.....	42	47
1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ in.....	42	59
2 $\frac{1}{2}$ in.....	47	61
2 $\frac{1}{2}$ to 5 in.....	52	65
6 to 13 in.....	42	59
2 $\frac{1}{2}$ in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 $\frac{1}{2}$ in. and larger, over 22 ft. long, 10 per cent. net extra.		

Iron and Steel Scrap.—For the first time in three months or more we can report a slightly better feeling in the Scrap trade. While the demand is still from hand to mouth, and only for small lots, it is believed that prices have about reached bottom. It may be noted that prices on Scrap are lower in proportion than on any other crude materials. Dealers quote about as follows: Heavy Steel Scrap, for Pittsburgh, Steubenville or Sharon delivery, \$12.50 to \$13; No. 1 Cast Scrap, \$14.50; Cast Iron Borings, \$6 to \$6.50; Bundled Sheet Scrap, \$9.50 to \$10; Low Phosphorus Melting Stock, \$16.50 to \$17; Rerolling Rails, \$12.50 to \$13; No. 1 Busheling Scrap, \$12.50; No. 2, \$9.50 to \$10; Old Steel Rails, short pieces for Open Hearth use, \$12.50 to \$13; Steel Axles, \$16 to \$16.50; Standard Sheet Bar Crop Ends, \$15 to \$15.50; Grate Bars, \$11.50 to \$12; Iron Axles, \$21.50. All these prices are per gross ton, f.o.b., Pittsburgh, unless otherwise stated.

Coke.—Negotiations are under way between furnaces and Coke producers on contracts for first half of the year, but so far very little tonnage has been closed. Standard Connellsville Furnace Coke on contracts is held at \$2 to \$2.10, but it is stated that in some cases \$1.90, at oven, has been

named. Standard Connellsville 72-hr. Foundry Coke on contracts is held at \$2.40 to \$2.50, at oven, but other grades of Furnace and Foundry Coke made outside the Connellsville region are offered at somewhat lower prices. The output of Coke in the Upper and Lower Connellsville regions is running somewhat under 100,000 tons per week.

The offices of Max Solomon, dealer in Iron and Steel Scrap, have been removed from room 1209 to rooms 1204-05 Park Building, Pittsburgh.

Cleveland.

CLEVELAND, OHIO, January 14, 1908.—(By Telegraph.)

The Massillon Iron & Steel Company, Massillon, Ohio, closed contracts to-day for 13,500 tons of Foundry Iron for first half delivery. The company refused to state whether it bought Northern or Southern Iron, or to give the price, but a local furnace company that asked \$17 was told that it got none of the contract because its price was much too high. The manager of the company says that he had bought all of the cheap Iron available and that he is surprised at the firmness of the market.

(By Mail.)

Iron Ore.—As a result of the curtailment of Ore consumption, due to the shutting down of blast furnaces during the past two months, shippers estimate that if the furnaces should start up to-day and produce the normal output of Pig Iron, there would be enough Ore in the furnace yards and on the docks to last until August 1. Last year, at the opening of navigation, there was very little of the previous season's Ore left on the docks. Under the circumstances it is not surprising that furnacemen are taking no interest in this year's Ore, and it is doubtful if any buying movement starts until well along in the spring. The first chartering for the coming season has been done by a Tonawanda shipper, who has contracted for carrying a small block of Ore from Escanaba to Tonawanda at 75c., the same rate that prevailed last year. The leading shippers, however, are not expected to close freight contracts for some time. Ore piles still remain untouched on the docks, practically no shipping orders coming from the furnaces. Nominal prices remain as follows at Lake Erie docks, per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range Non-Bessemer, \$4.25; Mesaba Non-Bessemer, \$4; Siliceous Bessemer, \$2.75; Siliceous Non-Bessemer, \$2.35 to \$2.60.

Pig Iron.—There is an increase in inquiries for Northern Foundry Iron for first half delivery, but consumers who seem ready to buy are slow about placing contracts. While No. 2 Foundry is claimed to be held at \$17, Valley furnace, for first quarter and first half, the sale of some No. 2 is reported as low as \$16.50. One furnace interest reports sales during the week of 1500 to 2000 tons of No. 2 at prices ranging from \$16.90 to \$17.25, Toledo, for first half delivery. Outside of these sales very little tonnage was contracted for during the week. Local furnaces quote No. 2 at \$17 for outside shipment and \$17.25 to \$17.75 delivered here for prompt shipment and first half. There is some improvement in the inquiry for Southern Iron, and a few sales are reported in small lots at \$13.50, Birmingham, for the first quarter. Inquiries made recently for Basic Iron have not resulted in any sales, and are believed to have been made for the purpose of testing the market. Quotations for prompt shipment, first quarter and first half, f.o.b. Cleveland, are as follows:

Bessemer	\$19.40
Northern Foundry, No. 1.....	\$17.50 to 18.00
Northern Foundry, No. 2.....	17.00 to 17.50
Northern Foundry, No. 3.....	16.50 to 17.00
Southern Foundry, No. 2.....	17.35 to 17.85
Gray Forge.....	17.25

Coke.—The market continues quiet, there being little inquiry for either Furnace or Foundry grades. We quote Connellsville Furnace Coke at \$2 to \$2.25, at oven. Connellsville 72-hr. Foundry Coke is being quoted at \$2.75 to \$3 at oven.

Finished Iron and Steel.—While the volume of new business and specifications on contracts is still light, a few of the mills and jobbers note a slight improvement. The local district sales agent of one mill has closed a contract with a Structural shop for 2000 tons of Plates, Shapes and Bars, and received specifications on contract for seven carloads of Plates for tank work. Following the action of the Western Bar Iron Association, local mills have made a reduction of \$4 a ton on Iron Bars. The reduction has resulted in the placing of some new Bar contracts, but local mills that shut down before the holidays have not started up yet. While the price of Steel Bars is still firm, some consumers believe that independent mills will not be willing to permit the Bar Iron mills to divert business from them through the reduction in price and will follow shortly with a reduction in the price of Steel Bars. The local trade has received notification that the subsidiaries of the Steel Corporation have reaffirmed prices on Steel Bars, Shapes,

Plates, Tubes and Wire products for the spring trade. The leading interest is not urging consumers to make new contracts, advising them to place orders only for their immediate needs. Local mills are quoting Iron Bars on the basis of 1.40c., Pittsburgh, or 1.50c., Cleveland. We quote Steel Bars at 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, ¼ in. and heavier, 1.80c., base, Cleveland. Mill prices on Sheets, carload lots, Cleveland, are as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Jobbers' prices are unchanged, except on Iron Bars. We quote Steel Bars, out of stock, at 1.90c. to 1.95c., and Iron Bars at 1.80c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.20c.; Box Annealed, No. 28, 2.90c.; Galvanized, 4.05c. Warehouse prices on Boiler Tubes, 2¼ to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

Old Material.—The local mills are still shut down and are not in the market for any Scrap. There are some inquiries from foundries that appear disposed to accumulate a stock of low priced Scrap, but buyers and sellers are so far apart on prices that no sales are reported. The reduction in the price of Bar Iron, it is believed, will result in a little more activity in the Scrap market, although with the present price of Bars better Scrap prices are not expected. There is a fair demand for Busheling, and its price is a little firmer. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are nominally as follows:

Old Steel Rails.....	\$11.50 to \$12.00
Old Iron Rails.....	16.00 to 17.00
Steel Car Axles.....	17.00 to 18.00
Old Car Wheels.....	16.00 to 17.00
Relaying Rails, 50 lb. and over.....	25.50 to 26.00
Relaying Rails, under 50 lb.....	28.00 to 29.00
Heavy Melting Steel.....	11.50 to 12.00
Railroad Malleable.....	12.00 to 13.00
Agricultural Malleable.....	11.00 to 12.00
Light Bundled Sheet Scrap.....	9.00 to 10.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$17.00 to \$18.00
Cast Borings.....	4.50 to 5.00
Iron and Steel Turnings and Drillings.....	7.00 to 8.00
Steel Axle Turnings.....	7.50 to 8.00
No. 1 Busheling.....	11.50 to 12.00
No. 1 Railroad Wrought.....	11.00 to 12.00
No. 1 Cast.....	12.00 to 13.00
Stove Plate.....	10.50 to 11.00
Bundled Tin Scrap.....	9.00

San Francisco.

SAN FRANCISCO, CAL., January 8, 1908.

The new year has opened rather auspiciously, considering what has transpired during the past three months. A number of large Steel frame structures are being erected in this city which are larger than anything that has been built here since the fire. There is enough clear weather between rainstorms to permit of good progress being made on Steel work. Fortunately for the building situation, the threatened trouble between the various unions was prevented from going too far. The warring unions returned to work after a few days, pending a final settlement of the questions at issue.

Structural Material.—Shipments of Fabricated Steel for structural purposes are coming through in good time, the falling off in many lines of freight having prevented a car shortage such as caused vexatious delays on goods in transit last winter and spring. The erection of Steel for the new Palace Hotel on the immense site formerly covered by the old one was commenced January 7, and an effort will be made to complete the work in record time. The contract for the 1700 tons of Structural Steel required for the new Academy of Sciences Building was recently awarded to Milliken Brothers, Ltd. The demand for steel frame office buildings has almost been supplied, and there will soon be enough hotels here for the present population. Under the new city administration, which took entire charge of municipal affairs this week, confidence will be restored. With an honest city government thousands of additional citizens will be attracted, and many new buildings will have to be erected in consequence.

Cast Iron Pipe.—There is not much immediate demand for Cast Iron Pipe on this coast and no large contracts have been closed recently, but a great deal of business is expected during the year from municipalities and water companies. A strong effort is to be made to have the Transcontinental Association change the differential, so that Cast Pipe will have a more equitable freight rate per foot to the Pacific Coast. It is asserted by the interested persons that on account of the great difference in the weight of Cast Iron and Steel Pipe foot for foot the latter has the advantage on the Pacific Coast. The Transcontinental Association will hear both sides of the question soon in Chicago. The United States Cast Iron Pipe & Foundry Company was the lowest bidder on a small contract for 8 and 12 in. Cast Iron Pipe for the use of the municipal water system of the town of

Oceanside, Cal. The recent drop of \$1.75 in the price of Cast Iron Pipe in Cincinnati makes the Pacific Coast prices about as follows, f.o.b. cars San Francisco and other terminal points: 4-in., \$28 to \$29; 6-in., \$27 to \$28; 12-in., \$26.50 to \$27.50.

Merchant Pipe.—The demand for Merchant Pipe has not improved since the last report. Jobbers' stocks are sufficient for present needs. Discounts on Steel Pipe are about as follows, on jobbers' carloads:

	Black.	Steel. Galv.
1/4 to 1/2 in.....	58.5	42.5
3/4 in.....	60.5	46.5
1 in.....	62.5	50.5
1 1/4 to 6 in.....	66.5	56.5
7 to 12 in.....	63.5	48.5
Extra strong, plain ends:		
1/4 to 3/4 in.....	51.5	39.5
1/2 to 4 in.....	58.5	46.5
4 1/2 to 8 in.....	54.5	42.5
Double extra strong, plain ends:		
1/4 to 8 in.....	47.5	36.5

Oil Well Supplies.—While it cannot be said that there has yet been a decided increase in the jobbing demand for Oil Casings, Well Tools, and general Oil Well Supplies, things are looking up in the principal Oil districts of California, owing to the growing evidence that the present consumption of Oil considerably exceeds the rate of production on the Pacific Coast. The increase in the price of Oil has stimulated the drilling of wells, and several new companies have been incorporated in California. Prices will undoubtedly go considerably higher, and after a little time there must be quite an improvement in the demand for Oil Well Supplies of all kinds. The Oil Well Supply Company, Pittsburgh, Pa., has leased for a long term of years the Griffith mill site on North Main street, in Los Angeles. It has been given out that this company purposes to expend \$250,000 in building and equipping a factory, but this is untrue.

Pig Iron.—There has been little change in the situation since the last report. Foundries, however, cannot put off purchasing largely much longer and there should be a better movement in Pig Iron before long. Some large orders for castings have been placed with local plants and others are expected as business revives. Several shipments of English Pig Iron have arrived by sea since the beginning of December, aggregating 9393 tons. The market is rather weak at unchanged prices. A shipment of 1000 tons of Chinese Pig Iron, made at Hankow, China, is due here within the next two weeks. The Asiatic product seems to be gradually growing in favor here, and as but little of the United States product can be used on account of high rail freights it seems to be a question of choosing between British and Oriental Pig Iron.

The total estimated valuation of San Francisco buildings for which permits were issued in the month of December was \$4,140,000. This increase of almost \$2,000,000 over November did not indicate improvement in building activities, but was accounted for by the filing of permits for two very large structures. The total amount of building work undertaken in 1907 was \$52,292,000, as compared with about \$39,000,000 for 1906. The permits issued in April of last year exceeded in total valuation those of any other month since the reconstruction of San Francisco commenced. The total amount expended in rebuilding the city since the fire of April 18, 1906, is \$85,070,000. More than one-fourth of the 28,000 buildings destroyed have been replaced, and at least 1000 more are in course of construction.

The building statistics of Los Angeles, Cal., show a falling off in the number and valuation of buildings for which permits were issued last year, as compared with 1906 and 1905. The total valuation in 1907 was \$13,851,154 and in 1906 was \$18,502,446. The total building permit valuation for December, 1907, was \$371,432.

The Arthur Koppel Company has been awarded a contract by the Los Angeles Water Commission for 30 Steel cars of special design and a large quantity of Light Rails for use on the aqueduct, which is to be constructed in connection with the extension of the water system.

The Union Iron Works, which closed during the Christmas holidays, reopened January 6, giving employment to more than 2000 men. J. J. Tynan is now superintendent of the plant, which is constructing several steamers. Many changes have taken place during the past year in the various departments. A great deal of repair work on the vessels of the coming battle ship squadron is expected.

The Fulton Iron Works has placed 200 additional men on its pay roll, owing to its increased business. This company has just received a large order for mining machinery for Alaska, requiring 60 tons of castings. Other orders have been received from mines in Alaska and California.

The Standard Steel Works, recently formed by the Baldwin Locomotive Works to operate the steel plant at Burnham, Pa., has increased its capital stock to \$3,000,000. The bonded debt has been made \$5,000,000.

The German Iron Market.

BERLIN, December 26, 1907.

Price reductions have ruled in all departments of the trade. There is probably no line of goods, except finished machinery castings, that has not been reduced since the end of October. The Steel Syndicate held out longest against granting lower prices. It has made a cut of 10 marks on material to be used in manufacturing goods for export, but when the manufacturers of Sheets and Bars complained that this cut was not big enough a further reduction of 5 marks was made in the first week of this month. At the same time a reduction of 10 marks on Structural Shapes and on half-rolled Steel for further manufacture was voted, this being the first concession the syndicate has made on home prices. But this was not all: the association followed this about the middle of the month with a reduction of 5 marks on small lots of Steel Rails and Ties for the home market and 10 marks for export. This latter step is all the more noteworthy in view of the fact that Steel Rails remain the most active feature of the market, there being still very large orders on hand, both for home and for foreign account. Some of the new prices are as follows: Ingots, 87.50 marks; Blooms, 92.50; Billets, 100; Puddled Bars, 102.50—all of soft (Thomas) Steel. The price of Beams is 122 to 125 marks.

The new prices of half-rolled material have not satisfied the rolling mills dependent upon the syndicate for their supplies of Steel. Especially are the mills running on Bars and Sheets discontented. A manufacturer of Bars has pointed out that he can only operate his rolls at a loss under present conditions. The price of Bars, he says, averages about 108 marks, while other authorities claim that German manufacturers are actually offering Bars abroad at less than 100 marks. But at the former price he claims that there is a loss of about 10 marks a ton on the Billets used in manufacturing a ton of Bars. Also in the case of Sheets, there is great dissatisfaction. The association of manufacturers of this specialty recently passed a resolution expressing disapproval of the price reduction made by the syndicate, and declaring a further reduction of 10 marks on Steel material to be necessary.

The syndicate's shipments for November show some interesting changes. The sales of structural forms reached only 85,000 tons, which is the lightest movement for any month since February, 1905, when the trade was injuriously affected by a huge strike of coal miners. The movement in October had been nearly 130,000 tons, and in November, 1906, it was 151,300 tons. These figures strikingly illustrate the restricted business in building this winter; and it is highly probable, in view of the dearth of money that building operations will remain light for some considerable time. The shipments of half-rolled material were also the lightest for about four years. They amounted to 115,900 tons, as compared with 150,000 tons last year, and 173,000 tons in 1905. On the other hand, more Steel Rails and Ties were shipped in November than ever before, the total reaching 222,000 tons, as against 181,000 tons in 1906, and 145,700 tons in 1905. This is the one section of the market where orders remain satisfactory.

The Pig Iron Trade.

The situation of Pig Iron had remained relatively strong till about a month ago. The highest output for any month in the history of the German Iron trade was reached in October, when 1,138,676 metric tons were produced. The November figures were 1,112,225 tons, which means a gain of some 300 tons per day over October. The year's production will probably reach a total of 13,050,000 tons, as compared with 12,478,067 tons for 1906.

It is probable that the December output will show a somewhat reduced rate of production, inasmuch as several furnaces have been reported as blown out since the beginning of the month. It is also expected that a further slowing up will continue for some time, since the furnace owners have no disposition to accumulate stocks at a moment when money is so extremely dear. For this latter reason furnaces will probably be blown out as fast as orders become exhausted. The building of new furnaces will also be curtailed or stopped entirely. Already the case has been reported of Lorraine concern, Sambre et Moselle, which had broken ground for two new furnaces, but has recently suspended work on them.

Prices of Pig have been further reduced within a month. The Luxemburg Syndicate, which supplies most of the Foundry Iron for the western part of the country, reduced its price to 54 marks in the second week of the month, in order to meet the competition of a large wholesale firm which, as was claimed, was selling Iron at a very low price for account of two or three of the great companies in the Rhenish-Westphalian region. It has been also reported in the press that even so low a price as 52 marks has been conceded in some cases. Under these circumstances the Luxemburg Syndicate is securing very few orders, inasmuch as consumers look for still further reductions. The Duesseldorf Syndicate, which includes the furnaces of the Rhine Province and Westphalia, has recently given out reduced prices for

the first half of 1908. Hematite was fixed at 83 marks, No. 1 Foundry at 79 and No. 3 at 71 marks. Puddling Iron was fixed at 74 and Steel making grades at 76 marks for the first quarter of the new year. The Siegerland Syndicate also recently knocked off 5 marks on Spiegeleisen. This syndicate has decided to restrict its production of Pig Iron by 25 per cent. from January 1. This is the first organized action looking toward reducing production. It should be added, however, that the output of the Siegen furnaces represents a comparatively small part of the Iron production of the empire.

Improvement in Some Finished Lines.

Quite recently some indications of an improvement have been reported in certain lines of goods. This is particularly the case with Bars. The low prices for this specialty, 145 to 150 marks, have brought finally an increased buying demand. Foreign orders in particular have been on a more liberal scale for a few weeks. Japan and India are mentioned as larger takers. Some of the works report that the increase of new business in Bars has been so good that they now have work enough for their rolls for several months ahead. Sheet mills are also doing a better foreign business.

The steadiness in the prices of Castings was mentioned above. About 10 days ago several of the organizations of foundrymen met and decided to make no reduction in view of the high costs of Coal and Iron, together with the high wages now paid for labor. The foundries still have a great deal of work coming in from the machine shops and electrical companies, and the outlook for the future is by no means bad. The Prussian railroad authorities have recently ordered 710 locomotives, 2100 passenger and baggage cars and 14,160 freight cars, to be delivered by October 1, while about 680 locomotives and 16,000 cars remain to be ordered. The orders aggregate fully \$100,000,000, and they will keep the shops busy for a long time. Besides this, the railroads of several of the South German States have recently placed good orders for rolling stock, the amount of which has not yet been stated.

The Ore Trade.

The Siegerland Ore Syndicate has recently reduced the price of brown Iron Ore for the first half of 1908, and it is said that it has already sold out its entire output of roasted Ores for that period. The cut on roasted Ores is 1.50 marks per ton. The imports of Ore in November reached 643,000 tons, or fully 50 per cent. more than in November, 1906, but less than for the preceding autumn months. The Siegen mines turned out more Ores in October and November than for the same months in 1906, which shows that the demand of the furnaces had kept up well.

A number of the great Rhenish-Westphalian Iron companies have within a year become interested in Iron mines across the Lorraine frontier in France. These are a part of the same great deposits which have made Lorraine and Luxemburg the greatest sources of Iron Ore in Germany, but those new French mines supply a richer Ore than that found on this side of the frontier. Hence, the companies mentioned have for some time been trying to induce the Government railroad authorities to transport the French Ores at the same cut rate as prevails for Lorraine and Luxemburg, and this action was decided upon a few weeks ago.

The Hardware Trade.

From the Hardware trade about Remscheid and other sections it is reported that business has again become less satisfactory. Now that the home trade is relaxing, the shops feel more perceptibly than before that the new commercial treaties that took effect nearly two years ago are having an injurious influence upon their foreign trade. This is particularly true of Austria and Spain. Some sections of the Hardware trade, however, particularly those that make fittings for railroad cars, are still doing a good business. From the cutlery trade at Solingen the news comes that the American crisis is having a very restrictive effect upon American orders. Not a few Americans have countermanded orders already placed, while some Solingen firms have suffered losses through recent American failures. Owing to the dropping off of the American trade some cutlery shops have already had to discharge labor, and it is expected that the lack of work will be felt still more keenly after the beginning of the new year.

The Dominion Iron & Steel Company has again won its case against the Dominion Coal Company. At Halifax, January 14, the Supreme Court of Nova Scotia unanimously dismissed the coal company's appeal and sustained the decision of the court at Sydney last summer in favor of the steel company. The amount at issue between the companies directly and indirectly is over \$15,000,000. The steel company claims damages from the coal company for breach of contract in not supplying the quality and quantity of coal required at the works of the steel company. An appeal can still be taken to the Privy Council of England.

New York.

NEW YORK, January 15, 1908.

Pig Iron.—The most important event of the week has been the purchase of upward of 12,000 tons of Pig Iron by a pipe shop at private terms. The market is firmer, but some makers are still offering a figure below those quoted by the majority of sellers. We quote at tidewater \$19 to \$19.25 for No. 1 Northern Foundry, \$18.25 to \$18.75 for No. 2 Foundry, \$18 to \$18.25 for No. 2 Plain, and \$17 to \$17.25 for Gray Forge. Alabama Iron is quoted \$18 to \$18.25 for No. 1 Foundry and \$17.50 to \$17.75 for No. 2 Foundry.

Structural Material.—The Cumberland River Bridge Committee, Nashville, Tenn., will open bids January 22 for two bridges over the river at that city, requiring about 3000 tons of Steel. In this locality not any of the large undertakings recently mentioned has yet been closed. It is not understood that any of them has been indefinitely laid over, but in every case some special reason has caused delay in placing the contract. New propositions are backward in taking definite shape. Some hope is entertained that increasing ease in money may enable railroad companies to secure funds to push needed improvements. Mills report a light demand for plain material. We continue to quote mill shipments, tidewater deliveries, as follows: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

Bars.—New business is light, both in Iron and Steel Bars. The Eastern Bar Iron mills are still idle, with few exceptions, and the mills that are running are only operating on part time. Much interest is being taken in the meeting of the Eastern Bar Iron manufacturers, which will be held on Thursday of this week, as it seems probable that some action may be taken with regard to a revision of prices. In the meantime quotations on both Iron and Steel Bars are continued at 1.60c., Pittsburgh, or 1.76c., tidewater.

Plates.—While inquiries are increasing, buyers are slow to close, and it is possible that most of the interest shown in the market has been for the purpose of ascertaining whether prices continue to be maintained or whether some concessions are now possible. No change has yet taken place in prices, which are quoted as follows for tidewater delivery: Sheared Tank Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

Cast Iron Pipe.—A fair January business is in progress. The New England buying movement, referred to last week as having begun, is assuming larger proportions, quite a number of the smaller cities and towns asking proposals on lots running from 200 to 800 tons. Inquiry from other sections is also better. That the Pipe manufacturers feel some confidence in the future is shown by the liberal purchases of Pig Iron which they are now making for future delivery. Carload lots of 6-in. are to be had at \$26 to \$26.50 per net ton, tidewater.

Old Material.—While the market is far from being what it should be, some indications of a change for the better are observed. A few sales by dealers are noted, comprising small quantities of Heavy Melting Scrap, Wrought Pipe and cheap grades of rolling mill stock, but most business has been done in Cast Scrap, of which some foundries have bought quite liberally. Railroad offerings are still heavy, but they are not pressing uniformly on all classes of material, being most severe on Rails. The low prices made here are attracting further attention in foreign markets and sales have been made of Old Car Wheels and possibly other Scrap Material for shipment to Europe. Quotations per gross ton, New York City, are as follows:

Old Girder and T Rails for melting.....	\$8.00 to \$9.00
Heavy Melting Steel Scrap.....	8.00 to 9.00
Old Steel Rails, rerolling lengths.....	10.00 to 11.00
Relaying Rails.....	15.00 to 16.00
Old Iron Rails.....	13.00 to 14.00
Standard Hammered Iron Car Axles.....	15.50 to 16.50
Old Steel Car Axles.....	13.00 to 14.00
No. 1 Railroad Wrought.....	10.50 to 11.50
Iron Track Scrap.....	9.00 to 10.00
No. 1 Yard Wrought, long.....	10.00 to 10.50
No. 1 Yard Wrought, short.....	9.50 to 10.00
Light Iron.....	4.50 to 5.50
Cast Borings.....	4.00 to 5.00
Wrought Turnings.....	5.50 to 6.50
Wrought Pipe.....	8.00 to 8.50
Old Car Wheels.....	15.50 to 16.00
No. 1 Heavy Cast, broken up.....	12.00 to 12.50
Stove Plate.....	11.00 to 11.50
Grate Bars.....	8.50 to 9.00
Malleable Cast.....	11.00 to 11.50

Wellman, Seaver & Head, Ltd., is the name under which the business of the Wellman-Seaver-Morgan Company will be carried on in Great Britain hereafter, the name of the managing director in London being used. The British company has recently formed a special furnace department and an electrical department, the latter dealing with the business in controllers and brakes.

Metal Market.

NEW YORK, January 15, 1908.

Pig Tin.—Prices are 1c. per pound higher. New business is scarce, and although the average turnover is in excess of that during December, it is not up to that of a week ago. The range of prices has been as follows:

	Cents.
January 9.....	27.15
January 10.....	27.10
January 11.....	27.15
January 13.....	27.75
January 14.....	27.75
January 15.....	27.75

The arrivals are small, amounting to but 475 tons. Since November 1, the receipts have not equaled the meager consumptive demand and stocks are again at a low point. Figuring the stocks on hand January 1, the arrivals since then and the metal due before February 1, would only give 1950 tons. The deliveries will exceed those of December and a squeeze before the end of the month would not be unexpected. Of course, the Mesaba will sail from London January 16 and might make this month's delivery, but she is a slow boat. The visible supply in Europe is increasing. The London market closes easy at £125 10 s. for spot and £126 for futures.

Copper.—The market is firmer, and prices are higher, due to European orders. Domestic consumers are uninterested as yet. Lake may be quoted at 14c. to 14.25c., Electrolytic at 13.87½c. to 14.12½c. and Casting Grades at 13.62½c. to 13.87½c. The inside price on Electrolytic is not obtainable by domestic consumers. The above prices are for large lots and for small orders of a carload a slight advance would probably be demanded. Exports continue to dominate the market. During the last 100 days exports have been in excess of production, which has largely reduced American stocks. The outgo so far this month has been 18,286 tons; the total exports since October 1 have been 120,000 tons. Notwithstanding the extraordinary takings by European consumers and middlemen and the amount of metal held there for financial reasons, buyers on the Continent are eager to make contracts whenever concessions are offered. The theory is advanced in some quarters that should American consumers enter the market and buy liberally, as they doubtless will do, Copper will be quickly reshipped across the Atlantic. This happened after the heavy export to China a few years ago, the metal afterwards being reshipped to Europe. In other well-informed quarters, with perhaps closer European connections, this idea is scouted, the belief being that before prices advance to give European holders a sufficient margin to compensate them, producers in this country will supply the demand. At such times exports will probably again fall to low figures. The re-importation of small quantities of Copper, however, would cause no surprise. Industrial conditions abroad are better than a few weeks ago. The strength in our own market, nevertheless, is largely influenced by the fear of depleting stocks through these heavy exports. Prompt Copper is scarce. The London market closes at £64 5s. for spot and £64 10s. for futures. A large business in futures was done to-day in London.

Pig Lead.—Firm tendencies prevail in the Lead market. Prices are higher, especially for futures, which are held at a premium. Some business was transacted as high as 3.85c., New York, but the leading producer is a seller at 3.75c. Deliveries during February are held at 3.85c. In St. Louis prices are higher at 3.60c. to 3.65c. for spot, with no offerings of futures.

Spelter.—Higher prices are named, but the volume of business is limited. Sales have been made at 4.65c. to 4.75c., New York, and 4.55c. to 4.60c. St. Louis. Future deliveries are held at a slight premium with little or no resultant business.

Antimony.—Prices are nominal and unchanged. Hallett's is quoted at 8.75c., and Cookson's at 9c. to 9.25c.

Aluminum.—Revised prices have been issued on Aluminum by the producers. No. 1 Ingots, guaranteed over 99 per cent. pure, are held at 33c., per pound, in ton lots. No. 2 Ingots at 32c. For small lots of 100 lb. and over advances of 3c. per pound are charged.

Ferroalloys.—Lower prices have been named on Ferrosilicon by both domestic and foreign makers. For 50 per cent. Ferrosilicon \$85 is now asked, either at seaboard or the works of domestic manufacturers. The high price last year was \$104. The new price on 75 per cent. Ferrosilicon is \$127.50. Ferromanganese is unchanged at \$48 to \$49, seaboard.

Nickel.—There has been no change in price. Ton lots are held at 45c. and smaller quantities at 50c. to 60c.

Tin Plate.—New business is not active. Buying, however, is expected to commence about February 1. The price of 100 lb. IC Coke Plates is \$4.89 f.o.b. New York, and \$4.70 f.o.b. Pittsburgh. Tin Plates in Swansea are 3d. lower at 11s. 9d.

Old Metals.—An improvement in the demand is noted,

but dealers' selling prices are unchanged from last week, as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	13.00 to 13.25
Copper, Heavy and Wire.....	12.50 to 13.00
Copper, Light and Bottoms.....	11.50 to 11.75
Brass, Heavy.....	10.00 to 10.50
Brass, Light.....	7.75 to 8.00
Heavy Machine Composition.....	12.00 to 12.50
Clean Brass Turnings.....	8.50 to 8.75
Composition Turnings.....	10.50 to 11.00
Lead, Heavy.....	3.40
Lead, Tea.....	3.15
Zinc Scrap.....	3.25

Iron and Industrial Stocks.

NEW YORK, January 15, 1908.

The stock market has been almost buoyant. A heavy weight has been removed from it by the remarkable change in the financial situation. The deficit in the bank reserves in this city was completely wiped out last week, and in its place was substituted a surplus over the legal reserve of more than \$6,000,000. It took the New York banks just seven weeks since the deficit reached the record breaking amount of \$54,103,600, on November 23, to make good this amount with an additional \$6,000,000 thrown in to make the surplus secure for a considerable period to come. The week before the deficit had stood at a little over \$11,000,000. The good feeling over this condition of affairs was not impaired by the application for receivers for the Chicago Great Western and the Seaboard Air Line railroads. In both these cases special causes were known to have existed, aside from the recent financial disturbance. Prices of iron and steel stocks improved rapidly, the United States Steel stocks having been specially strong on reports that the corporation will make a much more favorable statement on its operations for the last quarter in 1907 than had been expected. One of the features of the week was an advance in the Allis-Chalmers 5 per cent. bonds, which sold up to 60, after having sold at 55 the previous week. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 26¼ to 30¾, preferred 89¼ to 95¾; Car & Foundry common 30¾ to 32¾, preferred 90; Locomotive common 36¾ to 41¾, preferred 86½ to 90; Steel Foundries common 6¾ to 7, preferred 30 to 32½; Colorado Fuel 19¾ to 21¾; Pressed Steel common 20½ to 23, preferred 71½ to 73; Railway Spring common 29 to 29¾; Republic common 17 to 18¾, preferred 68¾ to 71¼; Sloss-Sheffield common 37½ to 41½, preferred 88; Cast Iron Pipe common 19¾ to 21, preferred 59½ to 62½; Can common 5 to 5½, preferred 50½ to 52½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 29¾, preferred 94½; bonds 88¾; Car & Foundry common 32, preferred 90; Locomotive common 41, preferred 90½; Colorado Fuel 21¾; Pressed Steel common 22, preferred 73¼; Railway Spring common 29½; Republic common 18½, preferred 71¼; Sloss-Sheffield common 41; Cast Iron Pipe common 19, preferred 62½; Can common 5½, preferred 51¼.

The New York Air Brake Company, like many other concerns selling to the railroads, has found itself in need of ready money, although doing a large business, because of the slowness of collections. The directors of the company are stated to have reached an agreement with the Advisory Committee of creditors by which the company's floating debt will be extended and the directors left free to consider the advisability of increasing their capital obligations without the embarrassment of having to consider at the same time the necessity of meeting current debts. The plan finally agreed upon by the committee and the directors involves the placing of a mortgage on the company's property, which is at present unincumbered, to cover the total amount of the current indebtedness and the issuance of new paper to the creditors, which is to run for six months, specifically secured on its face by the mortgage.

The receivers of Milliken Brothers, Inc., announced January 10 that they would anticipate the payment of interest on the company's outstanding \$3,000,000 6 per cent. bonds by paying it on January 15 instead of on February 1, when it actually falls due. They have no receivers' certificates outstanding, and have ample funds on hand. The company, it is said, has taken in more orders recently than in any similar period in its history, and is increasing its working force.

Dividends.—The United States Cast Iron Pipe & Foundry Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable March 2. Action on the common stock dividend, which has been at the rate of 1 per cent. quarterly, was deferred.

On Monday of this week the 140, 32, 72 and 84 in. mills and the No. 3 open hearth department at the Homestead Works of the Carnegie Steel Company, at Homestead, Pa., were started up. The Bessemer plant remains idle.

The Tariff in Congress.

Bills for Commissions and Repeal of Duties on Crude Iron.

WASHINGTON, D. C., January 14, 1908.—The unmistakable drift of the sentiment in Congress toward the revision of the tariff at a comparatively early date has been emphasized during the past week by the introduction of several measures of comprehensive scope. It is significant that while many tariff bills have been presented in the past two Congresses by minority members of the House and Senate, nearly all those introduced since the holiday recess have been drawn by Republicans of considerable prominence.

The Beveridge Tariff Commission Bill.

By far the most important bill relating to the tariff presented in the present Congress has been introduced by Senator Beveridge of Indiana, a leading member of the Republican Senatorial Steering Committee. This measure, which its author has been engaged upon since before the convening of Congress, provides for the creation of a tariff commission of five members to be appointed by the President "solely with a view to their qualifications as specified in this act and without regard to political affiliations." One member must be "identified with the producing interests," another is to be a lawyer "who has made a special study of customs and tariff laws," another must have a "special experience in connection with the administration of customs and tariff laws," another must be "familiar with industrial and commercial conditions in foreign countries affecting the competition of foreign products with products of the United States and thoroughly conversant with the customs and tariff laws of those countries," while the fifth must be "an economist and statistician who has given special attention to the subject of prices and cost of production as affecting the tariff." The members of the commission are to be appointed for terms of seven years, each commissioner to receive an annual salary of \$7500. The duties of the commission are set forth in the bill as follows:

Sec. 4. That said commission shall tabulate the results of said investigation and submit the same to Congress, together with an explanatory report of said facts so ascertained; and said tabulation of said facts and report in explanation of the same shall be laid before Congress at the earliest possible moment for the use, information and guidance of Congress; and at the request of the Ways and Means Committee of the House and the Finance Committee of the Senate, or by the direction of Congress by resolution, said commission shall sit with said above named committees of the House and of the Senate during the sessions of said committees when said committees are drafting or considering any bill affecting the customs tariff laws of the United States.

In presenting this bill in the Senate Senator Beveridge stated that while he had given considerable thought to its formulation, he was not absolutely wedded to it, but would support any measure along similar lines which promise greater efficiency. He insisted, however, that it was the duty of Congress to create a tariff commission at an early date, and he gave notice that he would follow the matter up vigorously. The bill was referred to the Senate Finance Committee, which is already receiving petitions and memorials in its favor.

The Warner Tariff Commission Bill.

Another bill providing for a tariff commission has been presented by Senator Warner of Missouri, who puts it forward as indicative of the sentiments of the Middle West, where the people, in his opinion, strongly favor a conservative measure of tariff revision in the early future. The bill authorizes the President to designate three members of the Board of United States General Appraisers to serve as a commission to inquire into industrial and commercial conditions as affecting the tariff. The information obtained by the commission is required by the bill to be reported from time to time to the Secretary of the Treasury, with appropriate recommendations, and it is made the duty of the Secretary upon the convening of Congress in December each year to transmit to the House, with his recommendations, all reports received from the commission.

Representative Russell of Missouri, has introduced a bill providing that "from and after the approval of this act no import tax duty shall be collected upon iron ore, iron in pigs and bar iron." Mr. Russell is a member of the minority, but asserts that throughout the Middle West there is a strong sentiment, without regard to party, that the duties on the cruder forms of iron should be repealed. The bill has been referred to the Ways and Means Committee, but although its author proposes to urge a favorable report upon it, there is little likelihood that it will be acted upon at the present session.

W. L. C.

The Southern Steel Company's Affairs.

A petition was filed January 11 in the Federal Court at Birmingham for the return of certain of the Southern Steel Company's properties in the State of Alabama to the possession of the Lacey Buck Iron Company, the American Trust & Savings Bank of Chicago, trustee for about \$2,000,000 worth of collateral notes guaranteed by the stock of the company, and W. F. Stowers of Gadsden. Judge Hundley set January 20 as the date of the hearing.

Following the action of the Birmingham court, a petition was filed in the Federal Court at Chatanooga, Tenn., in which the Trust Company of America of New York, trustee, under mortgage to secure an original issue of \$600,000 of bonds, and the Chattanooga Iron & Coal Company pray for the possession of the properties of the latter company, now held by the Southern Steel Company.

A press dispatch from Birmingham dated January 12, says: "The receivers appointed by the Federal Court for the Southern Steel Company will shortly file their final report and ask to be discharged. The creditors will be authorized, it is believed, to elect trustees, and already the following have been suggested: W. H. Hassinger, former vice-president and Southern manager of the Republic Iron & Steel Company; John A. Morris, capitalist and wholesale grocer; J. M. Kyle of Gadsden, Ala., lumber manufacturer. These trustees appear to be satisfactory to the majority of the creditors. It is understood that a fund can be raised among the stockholders to start operations in the near future, and that within a short time the operation of the works will bring about a reorganization of the company, with the creditors getting dollar for dollar for their claims, or near that amount."

Labor Notes.

The bi-monthly wage settlement between the Amalgamated Association and Western bar iron mills was made on an average selling price of 1.55 cents for iron bars in November and December, which reduces the scale for puddlers from \$6.50 to \$6.37½ a ton for January and February. The finishers are reduced about 1 per cent. for the same months.

Labor at the blast furnaces and in the mines in the vicinity of Birmingham, Ala., is being notified of reductions in wages of 12½ to 15 per cent.

A proposition to amend the anti-conspiracy section of the penal code of the United States, so as to declare specifically the right of labor unions to strike and to boycott, brought out a sharp and heated contest in the House of Representatives January 11, resulting finally in the defeat of the measure. No roll call was taken. The fight against the proposed amendment was led by Mr. Sherley of Kentucky, a Democrat, who said in the course of his remarks: "The laboring man is entitled to his rights, but the time has not come in this country when any class of men is entitled to special rights over any other class. I am willing to defend the laboring man, but I am not willing to be demagogic about it."

The National Department of the National Tube Company, at McKeesport, Pa., which has been shut down since late in December, started up on Monday, practically full in all departments. Improvements and repairs were made to the plant during the shutdown.

The Machinery Trade.

NEW YORK, January 15, 1908.

Business with machinery houses the past week was rather quiet with inquiries and orders of too little importance to perceptibly change the situation from that of the previous week. There are a few fair sized projects being carried forward, for which equipment is being bought, and these, with the orders for single tools and small lots, constitute the entire volume of trade. Most of the large projects have been shelved for the present and will not be taken up until the financial situation shall again become normal. Without doubt the chief obstacle to the return of a better demand is the scarcity of money, which is restricting business in many directions. It is said that the railroads are suffering a heavy loss of freight, on account of the money stringency, and that they have large numbers of idle cars and locomotives. At this time the roads ought to be carrying grain in large quantities from the West, but it is learned from a reliable source that the grain is in the storehouses, the owners not being able to move it because of their inability to borrow money on it. This is only one of the adverse conditions affecting the railroads, whose policies are usually looked upon as indicative of the trend of business—either toward expansion or restriction.

While some departments of the more important manufacturers have received a fair amount of business since the first of the year, others report a considerable falling off in the demand; and strange though it seems, the department of one of the large interests producing expensive machines, which are not replaced every year, is receiving a great deal more business than the other departments which make small tools, which are constantly wearing out and being renewed. The activity in some classes of machines, due to an extent to export orders, has been widely circulated and exaggerated by the daily press, leading some manufacturers in the West to believe that business is much better in the East than it is.

Sales managers in the heavy power equipment line say that there is a large amount of prospective business in sight, but they bewail the fact that little purchasing is being done. Some inquiries now before the trade have been placed time and again during the last few months, and power men say that the actions of prospective purchasers indicate that they are expecting lower prices. The fact that these inquiries recur with the same firms frequently indicates that prices are being maintained, and it is declared that there is little possibility of a break. Manufacturers have been at considerable cost to produce the equipment now offered for sale, because of the high price of labor and material, and it is hardly possible that any of them can well afford to make a reduction. It is expected that the patience of those waiting for lower prices will soon be exhausted, and when it is time for them to make purchases, not only those in the power equipment line, but the trade in general will be benefitted.

Another association has been formed to promote the business interests of the members and to otherwise facilitate the carrying on of business. About 25 of the leading export houses of New York have organized the American Exporters' and Importers' Association, principally for the purpose of promoting trade with foreign countries.

Important Power Plant Extension.

Ford, Bacon & Davis, 115 Broadway, New York, will buy machinery for an extensive addition which is being made to the Smith street power house of the Coney Island & Brooklyn Railway Company at Ninth and Smith streets and Gowanus Canal, Brooklyn. The plant will be of about 4800 hp., and the general contract for the construction of building has been awarded to A. Pasquini, 1123 Broadway, and the foundation work will be done by the Raymond Concrete Pile Company, 71 Nassau street.

Some time ago the Lake Shore & Michigan Southern Railroad purchased a large plot of additional ground at Elkhart, Ind., as a site for new repair shops. While it is the intention to wait until business conditions improve before proceeding with the erection of the shops, it will in all probability do some building at that point shortly. The company's machine shops and other buildings in that city were recently destroyed by fire, and it is understood that these will be rebuilt as quickly as plans can be prepared.

It is stated that the Georgia, Florida & Alabama Railroad has completed plans for its new shops at Bainbridge, Ga., to include machine shop, 60 x 90 ft., power house and blacksmith shop, 26 x 42 ft., and other buildings.

The recent purchase by J. P. Morgan & Co. of \$30,000,000 equipment trust notes from the New York Central Railroad will likely result in the early purchase of new machinery by the road. We can state upon reliable authority that specifications have been prepared for a considerable

amount of machinery equipment which has been held up by the officials for some time, and as soon as the road receives the additional funds it is probable that these specifications will be released.

After the Panama Railroad has liquidated its obligations to the Government, it is understood that a considerable amount of money will be expended for additional equipment, to include a large coal handling plant.

Quite a little new machinery will probably be purchased by the Hudson Structural Steel Company, South boulevard and 136th street, New York, which has taken out a permit for the construction of a one and two story steel shop, 60 x 103 ft. The shop will be used for fabricating iron and will be equipped with new machinery.

A large plant for the manufacture of printing machinery will be erected, it is expected, by the Rotary Composing Machine Company, 261 Broadway, New York, which has been organized with a capital stock of \$2,000,000. The company has been incorporated under the laws of the State of New York, with William G. McGrath, William C. Evans and William H. Webb as directors. This organization, it is understood, is only temporary and in the near future the company will hold a meeting to select its officers. At present the company maintains a small plant in Brooklyn, where sample machines have been constructed, but plans are being made for the construction of one of the largest plants of the kind in the country. George Wishart is at present in charge of the mechanical details, but it is thought that it will be some time before the company will come into the market for machinery equipment, as it is not known as yet just what will be needed in that line.

While the large warehouse of the Carnegie Steel Company at Newark, N. J., has been completed and considerable machinery equipment has been purchased and installed, it is stated in the trade that the specifications have not been entirely filled as yet, and the company will soon require some electric hoists and similar equipment. The power plant has been installed and is in working order, and some heavy cranes have been purchased. The company has also bought some fabricating machinery, but it is expected that when the plant is in full running order more will be needed. This warehouse is the largest of its kind in the country, and is intended for the storage of material for export and supplying the Manhattan district.

It was stated in these columns last week, in reporting changes in the Mergenthaler Linotype Company, that R. M. Bedell had been given charge of the assembling department. This was erroneous, as Mr. Bedell has been made master mechanic, succeeding W. M. Brown.

The East Liverpool Foundry, Machine & Supply Company, East Liverpool, Ohio, desires to communicate with manufacturers of engine room and machine shop supplies of all kinds. The company expects to carry a general line of such stock for the trade, and would like to secure agencies.

The Elkins Power Company, Elkins, W. Va., is having plans prepared for a new electric light and power plant, to be equipped with engines, generators and other machinery, at a cost of \$30,000. John T. Davis is president.

The Department of Water Supply, Gas and Electricity of New York, will, on January 22, open bids for furnishing hand traveling cranes for the high pressure fire service stations of the Borough of Brooklyn. The surety required is \$3000, and specifications can be secured at the office of the commissioner, 13-21 Park row, New York.

The air compressor department of the Chicago Pneumatic Tool Company, New York, has received a good amount of business since the first of the year, it having received orders for more than fifteen compressors during the first 10 days, some of them of the larger size. The recent sales include four large compressors, to the Los Angeles Water Works, Los Angeles, Cal.; one 2000-ft. compressor, Aqueduct Commission, New York; two large compressors, Butler Brothers & Hoff Company, Detroit, Mich., for constructing the tunnel under the Detroit River; one large compressor, Boston & Albany Railroad, for the shops at Springfield, Mass., and one compressor, Rutland Railroad, for the shops at Rutland, Vt. Important orders were also received for shipment to foreign countries, including two large electrically driven compressors for the Portuguese navy; 1000-ft. steam compressor for Russia; two 500-ft. machines for Italy; 2000-ft. compressor, Intercolonial Railroad, and one 2000-ft. compressor, Canadian Northern Railroad, Canada.

Catalogues Wanted.—The Yetman Typewriter Company, North Adams, Mass., desires catalogues and prices on rubber vulcanizing outfits and japanning ovens. James M. Ryan is the company's purchasing agent.

The Niles Iron & Steel Company, Niles, Ohio, whose sheet plant is now closed down for repairs and inventory, expects to start up in full January 20. The company has added two more pots to the equipment in the galvanizing department and two new corrugating machines in the corrugating department, which give it a capacity of 2000 tons of galvanized sheets per month and about 2500 tons of corrugating roofing.

Chicago Machinery Market.

CHICAGO, ILL., January 14, 1908.

In attempting to represent the state of trade in any line from time to time it is difficult to preserve a correct sense of relative proportions. The volume of business moving at any given time may be small as compared with that of another period, yet it may, notwithstanding, be by no means of insignificant proportions. Measured by the standard of sales in the first half of last year, business in all machinery lines is, at the present time, undeniably dull, but when contrasted with some former seasons of depression and inactivity it presents a more favorable aspect. A glance at past records will convince the most pessimistic that what is now apt to be characterized as extreme dullness would have been, in other days, regarded as a decided improvement over then existing conditions. The market, it is true, lacks momentum such as is imparted by a demand arising from the progressive development of large industrial interests. Tool requirements embracing long lists of machines for shop extensions or equipment for new enterprises of notable size are now as rare as they were plentiful a few months since. But for all that the aggregate of orders comprising the incidental necessities of such plants and the growing needs of the vast number of small industries which dot the country constitute a business that, even now, is by no means inconsiderable. Orders for machine tools reported by dealers for the past week include several good sized millers and other machines, which were well distributed, the majority of sales representing but a single tool. Besides an increasing number of mail inquiries, which, it is observed, come largely from points west of Chicago, there are more prospective buyers visiting tool warerooms to investigate machines which they want now, or will purchase soon. A better assortment of stock, especially in new tools, is seen on dealers' floors than has been shown in many months, and shipments can be made of almost any standard machines without delay. A portion, at least, of the trade now coming in is comprised of orders that would have been placed last year had it been possible to get delivery within any reasonable time. This is evidenced by the large proportion of millers being sold; now that they can be supplied at once shops that have been waiting are coming in for such odd tools as they need. One sales agency states that within the past 60 days it has sold more milling machines than in any like period of 1906. This business was principally composed of scattered orders and included no large lots. A maker of presses and punches notes a more active inquiry for smaller machines coming chiefly from light manufacturing concerns throughout the West, which seem to be sanguine of a future demand for their product. On the other hand, very few orders are being placed by the big producers, nor are any of consequence expected until business picks up sufficiently to keep what machines they have busy.

A recent contract for an important installation of boiler shop equipment was secured by Jos. T. Ryerson & Sons, Chicago, from the Grand Trunk Railroad. These tools are for installation in the road's new Battle Creek, Mich., shops. The machines furnished by the company comprised a complete equipment of hydraulic punches, shears and other tools, including one four-column hydraulic flanging press of 750 tons capacity, sectional flanger, forging press, accumulator, two 35-gal. triplex pumps, one Ryerson flue cleaning machine, one bevel shear and two cold saws.

Although the amount of new work received within the last month or six weeks has been light, the Fort Wayne Foundry & Machine Company, Fort Wayne, Ind., has had work enough on back orders to keep it constantly engaged on full time. Among the orders now being turned out are: One 150-hp. and one 100-hp. tandem gas engine, together with a 250-hp. Wayne suction gas producer; one 100-hp. tandem gas producer engine, with one 150-hp. Wayne producer, for the Sanitary Can Company, Bridgeport, N. J. The company is now installing a 75-hp. gas producer equipment in the Jersey City plant of Charles Mundt & Sons, New York. Several other equipments are either under way or being installed, and it is stated that the company has work enough on hand to keep it running at full capacity for the next 60 days, at least.

Contracts for power plant equipment amounting to \$70,000 have been placed by the Continental Realty Company, Milwaukee, for installation in its new electric generating station now in course of erection. The electrical machinery, including two 1000-kw. and one 500-kw. alternating generators, together with engines and fittings, are being supplied by the Allis-Chalmers Company. The boiler battery will be comprised of Edgemore water tube boilers.

In pursuance of plans formed to admit a number of the old employees as shareholders, Hill, Clarke & Co., Inc.,

Chicago, have increased their capital stock from \$100,000 to \$150,000.

Sealed proposals are invited by the United States Reclamation Service, Federal Building, Chicago, until January 28, for the delivery, f.o.b. cars at shipping point, of materials for a coal conveyor. This will include a feeder system, an incline cable conveyor with capacity of not less than 5 tons per hour, and other parts necessary to complete the construction. Motive power for the conveyor will consist of a three-phase, 200-volt, 60-cycle, six-pole, induction motor, which will also be included in the proposal. Another proposal upon which bids will be received on January 28 calls for two special ball bearing jacks having a 6½-ft. travel and 35 tons capacity. Blue prints and specifications of all of the above equipment can be had upon application to E. T. Perkins, engineer, Reclamation Service, Federal Building, Chicago.

Philadelphia Machinery Market.

PHILADELPHIA, PA., January 14, 1908.

More inquiry for machinery and tools has developed, and local manufacturers and merchants feel more encouraged regarding business conditions. While the demand has been confined almost entirely to single tool propositions and largely for the smaller class of equipment, the fact that new business is actually moving has resulted in a much better feeling. It is not expected, however, that there will be any very aggressive buying movement at the time. In fact, if business develops in a moderate way only during the next 30 or 60 days, the trade will be pretty well satisfied.

Competition for business is pretty sharp. Manufacturers and dealers are anxious to get orders, and in some cases prices have been shaded. In others, however, such as the better grade of tools, quotations are being pretty fairly held. Stocks on dealers' floors are large, and prompt delivery can be had on almost all classes of tools except those of the larger and heavier types.

Manufacturers have in many cases caught up pretty well with the business on their books, and further curtailment policies have been adopted in some cases. Some plants that had temporarily closed down over the holidays have not yet restarted, or in cases where they have done so the production has been curtailed, so that some departments are only running on half time. Here and there a plant is found which is still being operated at its full capacity, and with enough orders on hand to keep going from one to three months ahead, but they are exceptional cases.

There is practically nothing being done in the way of export of machine tools. Inquiries for the standard tools have been very light, and while some business has been taken in special tools, it has been small compared to that of several months ago.

Second-hand machinery merchants have not had a very active week. The demand has been of a scattered nature, and sales have been few and confined almost entirely to tools of the smaller classes.

The demand for boilers and engines, both new and second-hand, has been rather quiet. Some good propositions, which have been held in abeyance owing to unfavorable financial conditions, are expected to develop as soon as the general situation improves.

Foundries are not taking on any material tonnage. Practically all of the business placed is for early delivery, there being nothing of any importance for future delivery before the trade. In some cases a slight improvement is to be noted in new business, but foundries are in most instances running with restricted output, some being in operation but three or four days a week.

The Tropenas Steel Company, New Castle, Del., expects to let the contracts for the construction of the foundry, power house and office building of its new plant in the course of the next 10 days. The foundry building is 100 x 200 ft. Active work on the building of the plant will be started as early in the spring as possible.

The city of Philadelphia now has available almost \$1,000,000 for municipal improvement, under the last installment of the \$6,000,000 portion of the recent \$13,000,000 loan. This money will be expended for work including the following, specifications for which will shortly be ready and bids advertised for by the various departments: Bridges, \$75,000; repairs, pumping station, \$180,000; high pressure fire main extension, center of city, \$150,000; filtration, pipe lines, \$60,000; extensions to water system, \$117,500.

Stearns & Castor, engineers and architects, have plans and specifications prepared for a one-story stone garage, 40 x 50 ft., to be built at Somerton, Pa., for H. A. Houseman.

Proposals were opened by the Director of the Department of Public Works of Philadelphia on the 15th inst. for a large quantity of supplies for the current year. These included 20 different classes of supplies for engineering, chemical and electrical purposes, wrought iron pipe, fittings, bolts,

nuts, washers, brass fittings and other supplies. The bids were ordered scheduled and the awards will be announced later.

The Baldwin Locomotive Works has reduced the working hours at both its local and Eddystone plants. There has been a decline in the total number of men employed (which, however, has been gradual), and they now number at the two plants about 15,000, as compared with 19,000 several months ago. Both plants went on 8 hr. a day on the 13th inst., while night work has practically ceased, and in some departments a full week is not being made. This concern reports inquiries rather light, and does not expect a very heavy resumption of orders until the financial situation, as far as the railroads are concerned, has improved.

The E. H. Mumford Company, builder of foundry molding machines, who recently purchased the American rights of the Universal system of machine molding and the line of machines made by Ph. Bonvillain & E. Ronceray, Paris, France, which system has been demonstrated at the latter concern's plant at 1315 Race street, this city, has moved its offices from Seventeenth and Callowhill streets to the former address. The machines for American sale will be manufactured by the Mumford Company. Meanwhile 22 machines, some for delivery and others for stock, so that prompt shipment can be had, are now in course of transportation from abroad. The company reports an improved demand for molding machines, quite a few orders having been taken since the first of the year.

New England Machinery Market.

WORCESTER, MASS., January 14, 1908.

A noticeable improvement has been felt in the machinery trade. Dealers report that they are receiving more orders, and machine tool builders are booking a little new business and are receiving favorable reports from their agents, who state that they are disposing of stock in a manner to indicate some buying on their part before a great while. The deduction should not be made that an immediate flourishing condition of trade is to be expected, but it is believed that the improvement already noted will be accentuated from now on until a fair volume of business is in hand. December, with some of the dealers, was better than the combined business of October and November. This was the experience of those who shared in recent railroad business. January, thus far, has been even better. One of the Boston dealers has just bought a considerable lot of second-hand tools, which indicates confidence in the early future.

Many good workmen are idle, and some employers are taking advantage of the opportunity to replace less skilled employees, perfecting their organization. Manufacturing establishments that have been compelled to let their good men go will suffer more in consequence when good business returns than those concerns which have maintained the skilled men of their forces, shortening working hours instead of laying them off.

The private development of water power for long distance electric transmission is becoming a common enterprise in New England. Manufacturing houses are establishing electric plants on water powers, even though these are at a distance from their works. The latest instance of plans for such an installation is that of the Stanley Works, New Britain, Conn., manufacturer of builders' hardware, which has received legislative permission to amend its charter so that it may transmit power from the Housatonic River at Kent in Litchfield County, Conn., for operating and lighting the New Britain plant. The company is also authorized to increase its capital stock from \$1,000,000 to \$3,000,000.

Albert M. Powell, until recently president and superintendent of the Woodward & Powell Planer Company, Worcester, Mass., has established a new business for the manufacture of metal planers under the name of the Powell Tool Company. He has taken a large space in the building on Gold street, Worcester, recently occupied by the L. W. Pond Machine Company for the manufacture of planers, and is at present equipping it with machinery. His lease includes machinery and tools formerly used by the Pond Company, and he has bought new tools, and expects to be in the market for more in the near future, though his list is not yet ready for announcement. Mr. Powell will manufacture an entirely new high speed planer, upon which he has been at work for several years. The machine will be fitted with several new mechanisms, which are unique in their class. The Powell Tool Company will first build one type of machine in one size, a 24-in. planer, designed especially for high speed forge work of the heaviest kind. Later, other sizes and types may be added. The plan is to manufacture it with interchangeable parts, "like a sewing machine," to quote Mr. Powell, and the first work of the shop will be the manufacture of a complete set of jigs and fixtures for specialized processes of planer building. It is the plan to incorporate the business

in Massachusetts. The officers will be Mr. Powell and his two sons, Charles S. and Alric M. Edward P. Taft, who for 39 years has been in charge of the planing department of P. Blaisdell & Co. and their successor, the Whitcomb & Blaisdell Machine Tool Company, will be superintendent of the shop. Mr. Powell has a wide reputation among builders and users of machine tools as the originator of the Powell planer and the founder of the Powell Planer Company, which later became the present Woodward & Powell Planer Company, and for 17 years he was president and superintendent of the company.

The A. H. Nilson Machine Company, Bridgeport, Conn., manufacturer of special machinery, is prepared to begin work on the addition to its plant in the spring, the structural material being already on the ground. The new part will practically double the capacity of the plant. The present building has been occupied but a comparatively short time, but the business has grown to demand the additional space. The company will buy new machinery when the enlargement has been made, the prospective list being a sizable one.

The Bristol & Warren Water Works are building at Warren, R. I., a new pumping station and mechanical filters with a capacity of 2,000,000 gal. a day. H. R. Worthington, New York, is contractor for the high lift pumps; the Lawrence Machine Company, Lawrence, Mass., for the centrifugal pumps; the New York Continental Jewell Filtration Company, New York, for the filters, and the Babcock & Wilcox Company for the boilers.

The Bristol Instrument Company, Waterbury, Conn., recently incorporated to manufacture measuring instruments, has changed its name to the Industrial Implement Company. The directors of the company are Bennett B. Bristol, Edgar H. Bristol and Watson E. Goodyear. The company is not ready to make announcement of its manufacturing plans.

Cleveland Machinery Market.

CLEVELAND, OHIO, January 14, 1908.

While the local machine tool market has not improved a great deal, it is better than during the last few weeks of last year. Dealers are not looking for much activity during the next few weeks, but general conditions lead them to believe that the demand for tools will gradually but slowly grow better. There have been some sales of single tools during the week, and there is a slightly better volume of inquiries. No large sized inquiries have developed, however, the prospective purchasers being small concerns that are in the market for one or two tools. A large share of these inquiries are for second-hand tools.

The general situation has not improved as rapidly as exaggerated newspaper reports regarding the resumption of activity would lead one to believe, but industrial plants are putting back some of their workmen from day to day, and a number are now running at 75 per cent. or more of their normal capacity. Machine tool builders report that their business is picking up, both in the volume of orders and inquiries. One local plant that builds bolt and nut machinery, which has a large foreign trade to help out when domestic orders are limited, is now running at practically full capacity. Crane building plants are getting a few orders for small single cranes for foundries or other small shops, but no new inquiries for cranes are coming from large industrial companies.

The local financial situation continues to improve, and 25 per cent. of the certificates issued by the Cleveland banks through the Clearing House Association have been recalled during the past week. The total issue was about \$3,000,000. Currency seems to have become fairly plentiful with the banks, but they are following a very conservative policy and are making only loans that are regarded as gilt edged. The recent financial stringency is still felt among the smaller industrial concerns, so that there is still considerable complaint about slow collections.

Prices of machine tools are being firmly maintained by dealers, although some purchasers look around a good deal before placing their orders, in the hope that they may be able to secure some concessions. Most dealers have large stocks of tools on hand, more than they wish to carry with business as it is at present, although they would not regard their stocks as too large if their volume of business was normal.

What is regarded as one of the most up to date drop forge plants in the country has just been completed by the Park Drop Forge Company of this city, which was organized a few months ago, and the new plant will be placed in operation in a few days. The plant is located on a 3-acre site, providing an abundance of room for extensions as they are needed, at East Seventy-ninth street and Gordon Park. A track from the Lake Shore Railroad, which is but a short distance away, runs directly into the plant. The plant is 65 x 200 ft., with an L 60 x 60 ft. The building is of steel

construction, covered with corrugated asbestos. Large windows provide and abundance of light. The plant is equipped with two automatic drop hammers made by the Waterbury Farrel Foundry & Machine Company, and seven steam drop hammers built by the Chambersburg Engineering Company. The hammers range in size from 1000 to 3000 lb. There is room in the plant for more than doubling the present hammer equipment. For handling material there are two 15-ton electric cranes built by the Cleveland Crane & Car Company. Power for operating the hammers is furnished by an Erie tubular boiler. The most improved furnaces have been installed for heat treating, annealing and oil tempering. One section of the building is built two stories high, providing room on the second floor for a well equipped machine shop. The group system of motors is used in driving the machinery. The plant is especially equipped to forge and refine steels for the larger class of automobile and special forgings. The secretary, treasurer and active manager is Dwight Goddard, who for some time was Cleveland manager of the Wyman & Gordon Company. Thomas B. Smith, the superintendent, was formerly with J. H. Williams & Co., Transue & Williams Company and the Wyman & Gordon Company.

The G. H. Williams Company, builder of hoisting machinery, has added revolving derricks to its line of products during the past few months. The derricks are intended principally for handling coal, ore, sand and gravel. The company has recently received an order for one of the derricks from the Toronto Sand & Dredging Company, Ltd., Toronto, Ont., and for one with an 85-ft. boom from the Great Lakes Construction Company of Buffalo for canal work.

The Notman Stove Company, Alliance, Ohio, has been incorporated with a capital stock of \$50,000. The company intends to build a plant for the manufacture of stoves, but has not yet decided on a site. The plant will probably be located in Canton or Alliance, Ohio. The directors are C. A. Notman and A. S. Armstrong of Alliance, and A. H. Elliott, R. P. Lambright and R. B. Davis of Canton. Officers were elected as follows: A. S. Armstrong, president and treasurer; R. P. Lambright, vice-president; A. H. Elliott, secretary, and C. A. Notman, general manager.

The annual meeting of the Burt Mfg. Company, manufacturer of ventilators, oil filters, exhaust heads, &c., Akron, Ohio, was held January 6. The old officers were re-elected, as follows: W. F. Warden, president and general manager; H. F. Maranville, vice-president; M. E. Knowles, second vice-president; J. Asa Palmer, secretary. The report showed an increase of about 25 per cent. in sales during 1907 over the previous year, and that the prospects for the present year are very bright.

The Electric Controller & Supply Company reports an improvement in orders during the past few days, and the company's plant, which was entirely shut down for a short time, has resumed operations on half of its full capacity.

The Standard Machine Company has been incorporated at Columbus, Ohio, with a capital stock of \$10,000, to engage in a general manufacturing business. The incorporators are H. J. Odell, J. C. Burns, R. M. Lucas, C. E. Blanchard and M. L. Reed.

Extensive repairs and improvements are being made to the plant of the Dover Mfg. Company, Canal Dover, Ohio. The power has been insufficient for the growing needs of the plant and a new engine will be installed to furnish adequate power.

Cincinnati Machinery Market.

CINCINNATI, OHIO, January 14, 1908.

Bearing out the generally accepted statement that the machine tool industry is the first to feel the ill effects of a money depression and the last to recover, developments of the new year in this section fully illustrate its truth. Sales agents of the pig iron furnaces, representing the industry both North and South, are in receipt of inquiries, both of the nature of "feelers" and requests, for figures on early deliveries of good tonnages; makers of boilers and builders of engines are feeling much better, as some orders for power equipment are coming in; makers of medium and smaller sized units, motors and generators have had a gradually increasing inquiry and sale since the beginning of the year; but the tool man cannot truthfully attest to any brighter outlook, and as his order book is now about cleaned up of business placed last year, such as escaped the cancellation period, he looks anxiously about for straws to show what is in store for the future.

The newspaper accounts of conditions have in many instances been exaggerated somewhat, particularly in the case of the larger tool manufacturers; but this is not an unnatural result, realizing the great strain and heavy payroll under which many of them were working when the slump came, and the hastily inaugurated alternative of reducing time and employees to the minimum. Beginning the first of

the year, these establishments have been putting men back here and there, assembling parts, finishing up some essential department work, and getting the establishment in shape for an early resumption in the event it should be justified; but to say that the inquiries and sales have warranted the starting up of establishments on anything like the speed of the first half of 1907 would be ridiculous.

A glance over the field shows the majority of the tool builders working on schedules of from 30 to 40 hr. weekly, and with forces of from 50 to 75 per cent. of their normal payroll, although there are a few manufacturers who have retained practically their entire force in order to keep it intact, but have reduced working hours. Still further reductions in forces are looked for ere the tide of fortune turns in favor of the tool makers; for the end of January will see the greater part of advance orders booked last year finished and shipped.

The jobbing foundries were hit hard, and the reduction of melt has been marked. Aside from the failure of the Weber Foundry Company, however, there have been no serious results, and it may be truthfully said that the field is in very good shape. The period of shutdown has been utilized by a number of them to clean up, replace worn out machinery and accessories, and in several instances electric power equipment has been substituted for the boiler and engine. Among these is the Insurance Foundry of Covington, which has just substituted a motor, and reports a gain of 25 min. on the first heat of 7 tons. A good record during the depression and one worthy of note is that of the Star Foundry of Covington, which ran full time and normal capacity, save the loss of a day each week during three weeks and the shutdown of holiday week.

The report that the machine builders of this section have submitted to the demands of the foundrymen in the matter of uniform contract for renewals in the making of castings is exaggerated. Most of the local tool concerns whose contracts ran out the first of the year have either renewed on the basis of last year or sent their patterns out of town to other foundries. A form of contract gotten up by a committee of manufacturers and submitted to the foundrymen has been modified in several instances, and, it is said, is now acceptable to the latter. Such of those concerns as have not renewed with their foundrymen may do so on the basis of this form. Another meeting is to be held soon to determine the matter.

A matter which is now agitating the local machinery trade, and is receiving much attention at the hands of the press and capitalists, is the project of an elevated road, first agitated by J. G. Schmidlapp, president of the Union Savings Bank & Trust Company. The threatened loss to Cincinnati of the J. A. Fay & Egan Company, woodworking machinery, renewed the agitation, and it now looks as though the road would be built, which will give the Oakley factory colony the necessary stimulus, and bring about its completion on the elaborate lines first projected. As to the Egan Company's departure to other fields, the last word from President Thomas P. Egan dispels the danger of any such contingency, and it can be stated that the company will build its factory on its site on Bond Hill, and the transportation facilities will be provided whether the Traction Company recedes from its announced position or not. It was announced that the company would not build the road until certain population figures were in evidence and some financial assistance secured. The elevated road would give the factory colony at Oakley the biggest kind of a boom, for the question of housing the workmen has been one of the stumbling blocks, while the present transportation facilities from the city proper are inadequate.

On January 6 two departments of the Republic Iron & Steel Company's plant at Brazil, Ind., the nut and bolt and the turnbuckle shops, resumed operations with a force of about 400 men. The plant had been closed for three weeks.

The Brownell Boiler Works at Dayton, Ohio, which was shut down for a few days during the holidays, is running with a practically full force, and reports prospects brighter than for several weeks.

P. A. Myers was re-elected president; Guy C. Myers, vice-president; S. M. Chase, general manager; W. C. Stocklin, superintendent, and Edward Kaemmerer, secretary-treasurer of the Chase Foundry & Mfg. Company at the annual meeting. The president's report stated that the business of 1907 was the best in the company's history.

The annual meeting of the Cincinnati Metal Trades Association will be held on Thursday, March 5, when new officers will be elected and work outlined for the coming year. The association now has 70 members, covering 75 per cent. of the factories and 90 per cent. of the larger producers.

Huston Lowe of Lowe Brothers Company, Dayton, Ohio, will read a paper before the monthly meeting of the Engineers' Club of Cincinnati on Thursday evening, January 16, on "The Preservation of Structural Steel."

Rumors that the Cincinnati, Hamilton & Dayton Railroad had in preparation a list of specifications for new tools for the Lima shops prove to be unfounded, save that there is talk of such a list at headquarters, but no definite time has been set for its submission to manufacturers and dealers.

Makers of patterns for machinery, agricultural and stove manufacturers are doing very little, but think chances favorable for the future through reports from the engravers who make a specialty of machinery designs. One of the largest of these latter has been rushed the past week or 10 days, making engravings of machinery and parts from which it is argued that the catalogue and advertising departments are preparing for aggressive campaigns.

Government Purchases.

WASHINGTON, D. C., January 14, 1908.

From the estimates submitted to Congress, it is evident that the Isthmian Canal Commission will purchase a great deal of additional machinery this year, for work on the Panama Canal. The appropriations asked for cover machinery and appliances, \$5000; power plant, \$432,010; pumping plant, \$30,000; power plant, \$110,000; concrete mixers and conveyors, \$20,000; rolling stock, excavating equipment, shop machinery and electric light plants, \$1,742,100; tools, \$225,500.

The Isthmian Canal Commission will receive bids until February 6, circular No. 415, for a power plant, including boilers, boiler feed pumps, feed water heater, fuel economizer, generators, condensers, vacuum pumps, circulating pumps, electric crane, rotary converters, &c.

The following bids were opened January 2, for machinery for the navy yards:

Class 1. One 1500-lb. steam hammer.—Bidder 2. Alliance Machine Company, Alliance, Ohio, \$2170; 69, Erie Foundry Company, Erie, Pa., \$2040; 146, Manning, Maxwell & Moore, New York, \$1940; 153, Niles-Bement-Pond Company, New York, \$1950; 169, Prentiss Tool & Supply Company, New York, \$2265; 179, Pacific Tool & Supply Company, San Francisco, Cal., \$2200; 179, Rix Compressed Air & Drill Company, San Francisco, Cal., \$2250; 211, William Sellers & Co., Philadelphia, \$2095; 259, Drew Machinery Agency, Manchester, N. H., \$2441.

Class 2. One motor driven patternmakers' lathe.—Bidder 71, J. A. Fay & Egan Company, Cincinnati, Ohio, \$800; 91, Hallide Machinery Company, Seattle, Wash., \$645; 161, Oliver Machinery Company, Grand Rapids, Mich., \$1318, \$1500 and \$1739.

Class 3. One motor driven boring, drilling and milling machine.—Bidder 128, Lucas Machine Tool Company, Cleveland, Ohio, \$3696; 153, Niles-Bement-Pond Company, New York, \$4075 and \$3925; 169, Prentiss Tool & Supply Company, New York, \$3405; 170, Pacific Tool & Supply Company, San Francisco, Cal., \$3675.

Class 11. Three pipe bending machines.—Bidder 32, Baird Machinery Company, Pittsburgh, \$525; 50, Chicago Pneumatic Tool Company, New York, \$300; 100, Handian-Buck Mfg. Company, St. Louis, Mo., \$519; 123, Knox & Brother, New York, \$480; 203, Charles A. Smith, Chester, Pa., \$495.

Class 61. Twenty motors.—Bidder 85, General Electric Company, Schenectady, N. Y., \$20,430; 206, B. F. Sturtevant Company, Hyde Park, Mass., \$21,100; 246, Western Electric Company, New York, \$13,565 and \$14,315.

Class 62. Twenty motors.—Bidder 85, General Electric Company, Schenectady, N. Y., \$12,430; 206, B. F. Sturtevant Company, Hyde Park, Mass., \$9900; 246, Western Electric Company, New York, \$745 and \$8075.

Class 63. Twenty master controllers.—Bidder 38, Cutler-Hammer Mfg. Company, Milwaukee, Wis., \$11,800; 85, General Electric Company, Schenectady, N. Y., \$24,330; 160, Otis Elevator Company, New York, \$36,500; 192, James Schawel, New York, \$16,640.

Class 64. Twenty master controllers.—Bidder 38, Cutler-Hammer Mfg. Company, Milwaukee, Wis., \$9840; 85, General Electric Company, Schenectady, N. Y., \$17,760; 160, Otis Elevator Company, New York, \$30,800.

Class 65. Twenty shunt motors.—Bidder 60, Diehl Mfg. Company, Elizabethport, N. J., \$14,273.20; 85, General Electric Company, Schenectady, N. Y., \$11,240; 126, Lincoln Motor Works Company, Cleveland, Ohio, \$5900; 206, B. F. Sturtevant Company, Hyde Park, Mass., \$6850; 246, Western Electric Company, New York, \$5670 and \$6270.

Class 66. Twenty series motors.—Bidder 60, Diehl Mfg. Company, Elizabethport, N. J., \$9524; 85, General Electric Company, Schenectady, N. Y., \$4140; 206, B. F. Sturtevant Company, Hyde Park, Mass., \$5360; 246, Western Electric Company, New York, \$2515 and \$3045.

Class 67. Twenty complete controllers.—Bidder 38, Cutler-Hammer Mfg. Company, Milwaukee, Wis., \$1950; 85, General Electric Company, Schenectady, N. Y., \$5290.

Class 68. Twenty shunt motors.—Bidder 60, Diehl Mfg. Company, Elizabethport, N. J., \$4976; 85, General Electric Company, Schenectady, N. Y., \$4980; 126, Lincoln Motor Works Company, Cleveland, Ohio, \$3200; 206, B. F. Sturtevant Company, Hyde Park, Mass., \$3240; 246, Western Electric Company, New York, \$2730 and \$4230.

Class 71. One power punch.—Bidder 29, E. W. Bliss Company, Brooklyn, N. Y., \$614; 92, Henshaw-Bulkley Company, San Francisco, Cal., \$352; 153, Niles-Bement-Pond Company, New York, \$349; 176, Queen City Punch & Shear Company, Cincinnati, Ohio, \$285; 182, Harron-Rickard & McCone, San Francisco, Cal., \$460; 219, Toledo Machine & Tool Company, Toledo, Ohio, \$375.

Class 72. One motor driven emery grinder.—Bidder 57, Connecticut Dynamo & Engine Company, New York, \$315; 77, Frevert Machinery Company, New York, \$412; 92, Henshaw-Bulkley Company, San Francisco, Cal., \$310; 147, Manhattan Supply Company, New York, \$474; 182, Harron, Rickard & McCone, San Francisco, Cal., \$343.55; 185, Ransom Mfg. Company, Oshkosh, Wis., \$330.

Class 73. One groover, one double steaming machine and one hand bending machine.—Bidder 20, Berger-Carter Company, San Francisco, Cal., \$250; 92, Henshaw-Bulkley Company, San Francisco, Cal., \$133; 123, Knox & Brother, New York, \$235.63; 147, Manhattan Supply Company, New York, \$258; 173, Peck-Stow & Wilcox Company, Southington, Conn., \$185.43; 182, Harron, Rickard & McCone, San Francisco, Cal., \$249.76.

Class 74. One pump.—Bidder 18, Blake & Knowles Steam Pump Works, New York, \$765; 63, M. T. Davidson, Brooklyn, N. Y., \$650; 92, Henshaw-Bulkley Company, San Francisco, Cal., \$712; 150, National Electrical Supply Company, Washington, D. C., \$650; 212, Sandusky Foundry & Machine Company, Sandusky, Ohio, \$475.

Class 141. One metal saw machine.—Bidder 151, Nutter,

Barnes & Co., Boston, Mass., \$770; 153, Niles-Bement-Pond Company, New York, \$797 and \$912; 169, Prentiss Tool & Supply Company, New York, \$695; 231, Vandyck-Churchill Company, New York, \$835; 260, Excelsior Equipment Company, Pittsburgh, Pa., \$675 and \$450.

Class 171. One milling machine, &c.—Bidder 9, Brown & Sharpe Mfg. Company, Providence, R. I., \$2038.69; 78, Fairbanks Company, New York, \$2253.07; 123, Knox & Brother, New York, \$2373.10; 141, Montgomery & Co., New York, \$2032.38; 146, Manning, Maxwell & Moore, New York, \$2343.10; 147, Manhattan Supply Company, New York, \$2084.33; 190, Rudolph & West Company, Washington, D. C., \$2372.56; 193, Sherman, Brown, Clements Company, New York, \$2107.24; 227, Union Twist Drill Company, Athol, Mass., \$1942; 260, Excelsior Equipment Company, Pittsburgh, Pa., \$1250.33.

The following bids were opened January 6, circular No. 408, for supplies for the Isthmian Canal Commission:

Class 16. One single noncondensing engine.—Bidder 9, Ball Engine Company, Philadelphia, Pa., \$1375; 17, Buffalo Forge Company, Buffalo, N. Y., \$1065; 47, A. D. Granger Company, New York, \$1374 and \$1442; 58, A. L. Ide & Sons, New York, \$1350; 101, Ridgway Dynamo & Engine Company, Ridgway, Pa., \$1540; 129, Westinghouse Electric & Mfg. Company, Pittsburgh, \$1362.

Class 17. One engine type revolving field generator.—Bidder 42, General Electric Company, Schenectady, N. Y., \$1840; 47, A. D. Granger Company, New York, \$1700 and \$2136; 127, Western Electric Company, New York, \$2050; 129, Westinghouse Electric & Mfg. Company, Pittsburgh, \$1424.

Class 19. One vertical boring and turning mill.—Bidder 18, Bullard Machine Tool Company, Bridgeport, Conn., \$1803.18; 38, Fox Bros. & Co., New York, \$1795; 69, Manning, Maxwell & Moore, New York, \$1615.70 and \$1730.70; 85, Niles-Bement-Pond Company, New York, \$2090.

The following bids were opened January 7, for supplies for the navy yards:

Class 1. One No. 4 improved pipe threading machine.—Bidder 26, Crane Company, Chicago, \$799.20; 37, Walter H. Foster Company, New York, \$1075; 40, Frevert Machinery Company, New York, \$809; 68, Manning, Maxwell & Moore, New York, \$1050; 75, Niles-Bement-Pond Company, New York, \$1225; 90, Thomas Somerville Company, Washington, D. C., \$1028.16; 93, Vermilye & Power, New York, \$347.50; 101, Ernst Wiener Company, New York, \$1075 and \$363.80; 108, Excelsior Equipment Company, Pittsburgh, \$1095.

Class 11. One metal cold saw.—Bidder 17, Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., \$857; 73, Niles-Bement-Pond Company, New York, \$735; 74, Nutter, Barnes & Co., Boston, Mass., \$792; 106, Central Metal & Supply Company, Baltimore, Md., \$895; 108, Excelsior Equipment Company, Pittsburgh, \$675 and \$450.

Class 21. One adjustable band saw machine.—Bidder 3, Atlantic Works, Philadelphia, \$3300 and \$3100.

Class 31. One 20-in. universal milling machine.—Bidder 18, Becker-Brainard Milling Machine Company, Hyde Park, Mass., \$741; 19, Baird Machinery Company, Pittsburgh, \$798; 20, Brown & Sharpe Mfg. Company, Providence, R. I., \$742.53; 38, Fairbanks Company, New York, \$798; 45, Garvin Machine Company, New York, \$727.53; 47, Hill, Clarke & Co., Boston, \$680; 68, Manning, Maxwell & Moore, New York, \$660; 69, Motley, Green & Co., New York, \$937.50; 73, Niles-Bement-Pond Company, New York, \$697.

Class 32. One reheating or forging furnace.—Bidder 59, Kenworthy Engineering Company, Waterbury, Conn., \$2240; 76, Rockwell Engineering Company, New York, \$2450.

Class 91. One surface condenser.—Bidder 4, Alberger Condenser Company, New York, \$1135; 6, Blake & Knowles Steam Pump Works, New York, \$1096 and \$837; 32, M. T. Davidson, Brooklyn, N. Y., \$986; 68, Manning, Maxwell & Moore, New York, \$1128.75; 69, Motley, Green & Co., New York, \$1087.50; 93, Vermilye & Power, New York, \$824.90; 95, Wheeler Condenser & Engineering Company, New York, \$1000; 99, Williamson Bros. Company, Philadelphia, \$950; 100, C. H. Wheeler Mfg. Company, Philadelphia, \$805; 119, Pusey & Jones Company, Wilmington, Del., \$886.

Class 92. Two vertical duplex pumps and two horizontal piston pumps.—Bidder 6, Blake & Knowles Steam Pump Works, New York, \$1033; 119, Pusey & Jones Company, Wilmington, Del., \$1392.

Under bids opened November 4, circular No. 396, for supplies for the Isthmian Canal Commission, Joseph T. Ryerson & Sons, Chicago, have been awarded class 2, two punching and shearing machines, \$1284, and class 3, one horizontal punching machine, \$845.

The following awards have been made for supplies for the navy yards, bids for which were opened December 17:

Vandyck-Churchill Company, New York, class 91, one engine lathe, \$649.

Niles-Bement-Pond Company, New York, class 94, one shaper, \$715; class 105, one steam hammer, \$1350.

Pratt & Whitney Company, Hartford, Conn., class 102, one centering machine, \$260.

Bullard Machine Tool Company, Bridgeport, Conn., class 95, one boring and turning mill, \$1667.85.

American Wood Working Machinery Company, Rochester, N. Y., class 101, one rod and dowel machine, \$265.

Fairbanks Company, New York, class 103, one crank shaper, \$700; class 106, one power miller, \$709; class 108, one gear generator, \$2400.

Hilles & Jones Company, Wilmington, Del., class 104, one punch and shear, \$1290.

Beaman & Smith Company, Providence, R. I., class 107, one milling machine, \$4365.

Class 92, one engine lathe, and class 93, one crank shaper, have been canceled.

Under bids opened January 27, Circular No. 413, for supplies for the Isthmian Canal Commission, the Frevert Machinery Company, New York, has been awarded class 167, one engine lathe, etc., \$418.

Extensions by Sheffield District steel works in the past year, indicating the prosperity of the tool steel industry, are mentioned by the London *Times*. The plants improved include those of John Brown & Co., at Atlas Works; Thomas Firth & Sons, who are building a large establishment at Tinsley; Cammell, Laird & Co., at Grimesthorpe; Samuel Fox & Co. at Stockbridge, and Vickers, Sons & Maxim, who have erected a large plant for the production of drop stampings and "smithed" work.

HARDWARE

WHAT may be regarded as the formal opening of the Post Office Department's campaign to secure legislation establishing a domestic parcels post has been made in the House. Representative Sims of Tennessee has introduced a bill foreshadowed by the Postmaster-General and drafted in the Department, "providing for the establishment of a system of local rural parcels post." The bill is made up of five sections and is as follows:

Be it enacted, &c., That the Postmaster-General be, and is hereby, authorized and directed to establish a system of local rural parcels post, as herein-after provided, and to formulate and prescribe such rules and regulations under which such system shall be conducted as may be deemed necessary.

Sec. 2. That for the purpose of this act local rural parcels post shall be confined to and consist of the transportation and delivery by rural mail carriers, as mail matter and at the rates of postage prescribed in section 4 of this act, of articles and parcels of merchandise or matter, each article or parcel, not to exceed 11 lb. in weight, when originating and mailed at a rural delivery distributing post office and addressed to a patron of rural delivery from such office or any rural postal station tributary thereto; or when originating and mailed on a rural delivery route and addressed to a patron of the same rural delivery route or to any patron of any rural delivery route or rural postal station having the same distributing office as the rural delivery route on which the article or parcel is mailed.

Sec. 3. That the provisions of this act shall not apply to matter which is classified by law as first, second and third class, nor affect existing rates of postage thereon; nor shall there be accepted for transportation and delivery, as mail matter, by rural mail carriers, any intoxicating liquors (ardent, vinous, spirituous or malt), habit forming drugs, explosives, liquids liable to explosion by shock or jar or to spontaneous combustion, or any matter exhaling bad odor, or which from its nature or constituency is liable to contaminate or damage the mails.

Sec. 4. That the rates of postage on all articles, matter or parcels entitled to transportation and delivery under the provisions of this act shall be 1 cent for 2 ounces or less, 2 cents for more than 2 ounces but not more than 4 ounces, 3 cents for more than 4 ounces but not more than 8 ounces, 4 cents for more than 8 ounces but not more than 12 ounces, 5 cents for more than 12 ounces but not more than 1 lb., and 2 cents per pound for each additional pound or fractional part of an additional pound up to and including a total of 11 lb.

Sec. 5. That the compensation of rural carriers be increased to the extent of all receipts for such parcels post service hereby established, on each route, respectively, not to exceed \$300 per annum to each carrier, to be paid under such rules and regulations as may be established by the Postmaster-General.

This interesting measure is well worthy of a little analysis, leaving to a subsequent issue a fuller consideration of the objections to it. The first section, it will be noted, clothes the Postmaster-General with full authority to frame all rules and regulations under which the system is to be conducted, and as the bill describes only the character of the merchandise and the points between which it is to be conveyed and the rates of the service, it is clear that the Postmaster-General's discretion is intended to be exceedingly broad, covering especially all matters connected with the personnel of the service.

The second section is taken almost verbatim from the recommendations contained in the Postmaster-General's

last annual report, and is designed to limit the service to rural routes, but obviously does not shut out matter which may be transmitted by freight to a distributing office and there placed in the rural mail, a use of the service which would undoubtedly be made by the mail order houses.

The third section of the bill is of special interest. By specific provision it cuts off from the benefits of the reduced rate of postage all books and printed matter of every description, thus confining the proposed advantages to shippers of merchandise and depriving the service of the "educational feature," which has always constituted one of the strongest stock arguments in favor of the extension of the rural free delivery. A bid for the support of prohibitionists is also made in this section by the restriction denying the low rate of postage to intoxicating liquors. The exclusion of habit forming drugs as proposed by this section reflects an ingenious attempt to offset the opposition of the National Association of Retail Druggists, which, in a memorial addressed to Representative Overstreet, chairman of the House Post Office Committee, opposes the proposed postage reductions on the ground that they will stimulate the shipment into rural communities of "habit forming narcotic drugs, the sale of which is prohibited by law in these same communities except on physicians' prescriptions, but which are now being scattered broadcast by the catalogue concerns, which, of course, are not amenable to local statutes."

The fourth section of the bill embodies the schedule of rates of postage as originally drafted by the Postmaster-General, ranging from 1 cent for 2 oz. or less up to 25 cents for 11 lb. Attention should be called to the fact, in this connection, that these rates are the same as those originally incorporated in the Henry Parcels Post bill, so that if the Sims measure should become a law Congress could at any time extend the rural parcels post to the entire postal service by inserting half a dozen words in the annual Post Office Appropriation bill.

Section 5 of this extraordinary bill should receive very careful attention. Its provisions are little less than preposterous. They would in effect turn over to the rural carriers practically every dollar of additional revenue that might be derived under the bill, for it goes without saying that only in rare cases would the total receipts per route, which now average about \$150, exceed \$300 additional. The adoption of this section would mean that the enormous increase in the cost of the rural service to properly equip it to handle merchandise would have to be paid by the taxpayers at large, while the gross increased receipts would go to the carriers. The Postmaster-General has not indorsed this feature of the bill so far as is known, but he has been careful not to repudiate it, and it goes without saying that its effect upon the rural carriers throughout the country will be to induce them to exert all possible influence in favor of the passage of the measure. Of course, the chances are that if the bill should be favorably reported from committee under the pressure thus brought to bear, Section 5 would be eliminated before passage, and thus the carriers would have nothing to show for their labor and misspent enthusiasm.

The official proposition for a rural parcel post is thus before the country. The parties in interest are the resi-

dents of the rural routes, the merchants in the towns from which they emanate, and last, but not least, the public at large. The Post Office Committee will soon begin a series of hearings on the annual appropriation bill, with a view to reporting it as soon as possible. The Postmaster-General and his aides will be heard at length concerning the needs of the department and will take the opportunity to urge the passage of the Sims bill. The time is ripe, therefore, for all opponents of these propositions to protest against them to their Representatives and Senators. These protests, however, should not merely express opposition to the project, but should assign the reasons for such opposition. Protests should be directed also against the bill recently introduced by Representative Lafean of Pennsylvania, providing for the establishment of an experimental rural parcels delivery, for if the Sims bill fails the postal "reformers" intend to come forward with the experimental proposition, which they will urge on the ground that it will shed light on a very serious problem, "and will only cost \$10,000," a well worn phrase with which Congress has become quite familiar since it was first presented as an apology for the experimental appropriation for the rural free delivery service.

Condition of Trade.

There is a perceptible improvement in the general situation with more activity and a better feeling in the Hardware market. This results from the notable progress which is being made in the clearing of the financial skies with a general return to pretty nearly normal banking conditions, and the prospect of easy money before long. That the trade are preparing for the season's business is evidenced by the increase in the placing of orders. Buying is indeed not in large volume, but in quantities which are needed to complete assortments, and it is entirely free from the speculative element, being on cautious and conservative lines. The most noteworthy event of the week, so far as Hardware is concerned, was the announcement made on Monday by the American Steel & Wire Company that there would be no change in prices on Wire products for the spring trade, this decision having been reached after conference with other manufacturers. It was indeed the sense of the committee appointed at the Gary meeting that all interests would be better served by the maintenance of prices rather than by a readjustment on a lower level. The following of this policy by the Wire manufacturers will doubtless have an important influence in the trade, and will tend to reassure merchants and the public. In the lines directly affected it is thought that there will be a quickening of the demand at once, as stocks are low and in many cases broken. In other lines there is more or less attention being given to the revision of prices, but the changes are not radical or general. The extent to which production has been suspended or seriously curtailed suggests the possibility of a shortage of goods in some lines when the spring demand sets in. While it is no time for speculative buying or the laying aside of conservatism in the conduct of business, it is for each merchant to get his establishment into shape so as to be ready to take care of the demand which under existing conditions it is reasonable for him to expect. Special attention should probably be given to collections and to credits. The conditions are such as to justify and indeed call for a vigorous and energetic prosecution of business so as to keep up the volume of sales to about a normal amount.

Chicago.

Slowly, but surely, the financial atmosphere is clearing, and even now funds are available for the ordinary requirements of business. Considering the tense strain imposed upon manufacturing and commercial interests by the recent scarcity of money and general impairment of confidence, it speaks well for the soundness of such institutions that they have, with remarkably few exceptions, weathered the storm on an even keel, and, though still pretty closely reefed, are steering a safe course. It is perhaps a little too early to expect important results from the spring campaign in the Hardware trade, which has but fairly begun; besides, buyers are moving carefully and are disposed to restrict purchase to actual needs until conditions are more clearly developed. This is true not only of manufacturers and jobbers, but is equally the case with retailers and consumers. Noting the growing spread between the prices of raw and finished materials all interests are inclined to hesitate in placing forward orders on a basis of present costs. Possibly price reductions will not be immediately followed by a marked increase in demand, but, on the other hand, as long as the market is dominated by uncertainty tinged with a strong conviction of ultimate recession, buying will continue to be of hand to mouth order. Following the reductions announced in last week's issue in the price of Sheets affecting all gauges of both Black and Galvanized, new prices on Bar Iron have been agreed upon, which represent a decline of \$4 a ton from the former price of 1.75 cents, Chicago. Heavy Hardware jobbers report a quiet demand, which includes only filling in orders, there being no general reinstatement of held up shipments by the Wagon and Implement makers. Much interest and satisfaction is manifested by the trade in the announcement by the American Steel & Wire Company that present prices on Wire products will be maintained for spring trade.

Philadelphia.

SUPPLIEE HARDWARE COMPANY.—We have had a big storm, and the commercial craft has suffered more or less. While it lasted it was a sure enough tempest, and one which will be remembered for a long time. The Great Ship of Commerce, of which the Hardware trade is no unimportant passenger, has been for the last few years officered and commanded by financiers, and ordinary commercial men have been assigned positions of various responsibilities among the crew.

It is no reflection upon the bankers and other trustees of wealth that among them have been found men who were wanting in seamanship, and who, during the stress of the great storm we have just passed through, were compelled to resign their place of responsibility and leadership to others. The silver lining of the dark cloud is now showing, and will appear more visible as the days go by in the substitution of a different class of leaders—men who will do the banking business with more regard to the needs of commerce, and not handle the Great Ship as if it were on a voyage of piracy and adventure.

There is some consolation in reviewing the experience we have just passed through to realize that the Hardware part of the ship's company have come through the storm with very little permanent injury. We were not in command of the situation, and were obliged to keep below decks and seek our berths as best we could during the fury of the storm. The storm has passed, but it is by no means a calm sea as yet. The tempest has left the waters rough, and it will be many days before it is smooth sailing again. In the meantime, however, the Great Ship goes forward gathering speed daily, and before long we expect to be making normal progress again.

When the student of commercial history in future years reviews the story of the panic of 1907, we feel sure he will be impressed with the magnificent record made by both the Hardware manufacturer and retailer in the conservative way which they handled the question of panic prices.

The writer is not familiar enough with what has been done in other lines of merchandise to make a comparison,

but surely the contrast between the handling of stocks in the financial market and the almost unaffected prices of Hardware values is decidedly significant. Those of us who were fortunate enough to hear a representative of the Steel Corporation make some remarks at Atlantic City can appreciate how powerful has been the influence of this great organization, and others who have helped to sustain values until the period of hysteria had passed. Many million dollars have been saved to both wholesaler and retailer by this conservative force, and it is a great pleasure to acknowledge their testimony to the effect that all trusts are not bad trusts, and to suggest along with the denunciation and punishment of unworthy ones the commendation of those who deserve it.

Local business in Philadelphia is making steady progress. The number of orders shows a weekly increase, and while somewhat decreased in value give evidence of a wise conservatism on the part of the merchant.

The year is likely, to see a policy of ordering often and in small quantities, as there is small excuse for speculative buying.

We are decidedly optimistic; the great forces of Nature had pretty well gone into their winter's rest before the storm broke, and when the sap begins to flow and the grass begins to grow, fields and forests will demand attention, and the calls for seasonable goods will come from all sections of our land, insuring the average spring business.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The first of the year has come; we are quite confident of that, for it was marked by the receipt of an unusual number of calendars. Nothing so definitely marks the flight of time as the periodic advent of the annual calendar. What a variety of shapes it takes on! From the tiny leaflet which turns over on its nickel slides day by day to the large bank hanger with the startling announcement: "This is the — day." In between these contrasts there are pictures of horses and dogs, and farm scenes, marines and pictures of beautiful ladies, a little too suggestive perhaps of the harem, and some with the reminder on Saturday that to-morrow is a Sunday, that you are made to realize that you are not expected to work on the days which are marked in red. These calendars in all their multiplicity are a kindly evidence of thought on the part of somebody who has put you on his list and serve as a testimony either of friendship or past favors, or hopes for some to come. Never a one comes in to our desk but what we feel more or less indebted to the sender for his good will and the outlay he has made in our behalf.

Withal, there is a difference. Natural selection begins at once to operate. Some we choose for our own individual desk or office wall; some fall to the portion of the stenographer or to the porter to take home and one or more—they are apt to be of the beautiful ladies of the harem aforesaid—to the lot of the messenger boy. The distinction comes in either as a result of first choice of a truly artistic production in drawing and color; may be it is a tiger by Church, or a reproduction of Swartz of Germany, or some equally distinguished contributor to the salon of Paris; and, again, others come down to the matter of fact embossed representation of corn and pumpkins. All of them have their place, and all of them are judiciously distributed. What a lonesome New Year it would be without any calendars! After all, the essential features are the days of the week, with the holidays and Sundays differentiated from the working days by colored ink, usually red—this, in order possibly, that the "Bromide" may remark something about the red letter days.

But business is what we want to talk about and think about, selling goods we mean, not selling paper. It was not over strenuous this same sales proposition in November and December more particularly. As for that period we would be more than pleased to take the advice of the small boy and "fergit it." Now, orders are coming in freely, we confess, but the volume is comparatively small. Manufacturers have overtaken the demand, and jobbers can now fill orders on receipt as a rule; or, at least, there is no great lot of orders held over for the morrow. This enables the buyer to carry a smaller stock, and that is

exactly what he is doing. When the buying movement once begins there will be a world of stuff required to fill the empty bins. Whether this buying movement will be delayed until more declines take place other than those already on bars and sheets and roofing remains to be seen. It would only be natural if it should. Meanwhile the sidings are marked by long strings of empty cars that only three or four months ago were so hard to get for the impatient shippers.

It is folly to say that consumption is not increased by low prices. It would be a great relief to the railroads, for instance, if rails could be gotten off that dead level price indicated on *The Iron Age* chart by the long, blue line without a wave since 1901. Fortunately, on the other hand, prices are held down by firm controlling hands and not permitted to go soaring when temptation is strongest.

The most hopeful signs are things financial—the obliteration of the premium for currency, the resumption in the banks of their normal functions of taking deposits and crediting same, thus giving the commercial world something to work on, the reduction in the rate of interest for commercial paper—all of these have come back within a short time, so we soon ought to be doing business at the old stand as though nothing disturbing had occurred. Business will be done unquestionably, but the volume, what about that? Has the army of consumers learned the lesson of close economy, or will they spend lavishly as in the past few years? It is safe to say that the smartest man will win where his competitor fails; the economical man will have credit whereas the spendthrift flounders in debt. The same old principles which have governed the world from the days of the prodigal son down, who spent his substance, will still be in operation, and we shall be working under them whether we will or no. Somebody may bestow new names upon them, but their functions are just the same. Settling day comes and then we know if we have been fooling ourselves, our business policies are put to the test. Happy is he who is justified in his work.

St. Louis.

NORVELL-SHAIPLEIGH HARDWARE COMPANY.—Business in the new year has opened much better than we expected. After taking their annual inventory, merchants are placing nice, long sorting up orders. Specifications for spring goods, such as Wire Cloth, Poultry Netting, Screen Doors, Steel Goods, Ice Cream Freezers, Clevises, Hames, Trace Chains, &c., are coming in good volume.

We have received from our salesmen on the road a number of very handsome new stock orders, and have also sold several here in the house.

It now appears to us there is some danger of the recovery from the recent financial flurry being too sudden. We fear there is going to be a shortage of goods in many lines.

It is an old axiom with us that spring trade depends upon the weather; that fall trade depends upon the crops. Therefore we believe the character of the weather in the next 60 days will have a great influence over business. If we have favorable weather we predict a strong demand for goods.

What is sauce for the goose is not always sauce for the gander. It has been our experience that the changes in conditions affect lines of goods in very peculiar ways. In the South, for instance, when the lumber business is good and all the lumber mills are running full time labor leaves the farm and works in the mills. When these mills shut down this labor goes back to farming. The same thing is true when the factories in the large cities shut down either wholly or partly. Labor hikes out for the country. Therefore we have noticed in such years there has been an increase in the demand for Agricultural Tools, such as Hoes, Forks, Rakes, Shovels, Spades, &c.

We have also noticed that in bad years for manufacturing, or when large numbers of men are out of employment or on strikes, the Sporting Goods business is always better than at any other time. To illustrate, our sales of Loaded Shells in the panic months of November and December were the heaviest in our history. For-

tunately for us, we had a good stock to take care of the business. If you stop to think of it, it is perfectly natural that men who are out of work will devote their time to hunting and fishing.

As far as prices go, the market seems to be holding up very well. All jobbers' stocks are low—probably lower than they have been for years. They will be compelled to buy goods. No doubt these orders will stiffen the backbones of the manufacturers and those who may have been a little "wobbly" about prices will take a more hopeful view of the situation.

In our opinion the manufacturer, jobber and retailer who have the goods on hand to fill orders promptly in the next 90 days will have no cause to regret it.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—Business continues to improve steadily. Stocks in the hands of retail dealers have been reduced to a minimum, and it is confidently expected that a steady and increasing run of business will develop from now on. Grain and live stock is moving Eastward rapidly. The resumption of a number of Steel mills which suspended operations during the late financial disturbance is a very encouraging feature.

It could hardly be expected that the severe blow sustained recently by the business activity of the country could be healed in a hurry by a quick revival of business. We do look, however, for a gradual and cautious improvement for several months to come.

When we reflect, it does seem passing strange that within 24 hr. the financial fabric of this great and prosperous country could be shaken from "turret to foundation stone." The surprising feature was the suddenness of the metamorphosis; one jump from a national currency to a Christian Science circulating medium.

All indications now point to the fact that the industrial interests have been benefited by the temporary lull in business and have had an opportunity to readjust their plans on a more stable and conservative basis. The resumption, while it may not be as rapid as desired, is inevitable.

New Orleans.

WOODWARD, WIGHT & Co.—The general business of the year 1907, up to November 1, was very good and equal to or better than any former year in this section. Of course, the financial panic, coming on as it did very suddenly, curtailed business about one-half for the period of two months, and has left a large number of houses with considerable stocks of goods on hand which they expected to market during November and December.

We believe, however, that the most serious part of the depression is over; in other words, we believe that in the next 60 days the currency question will have solved itself; that the banks will have resumed payment, and that general mercantile paper of good standing will be sought for by the banks as heretofore. Our reason for this belief is that this is an agricultural country, and that our crops are good and that our prices, on cotton particularly, are remunerative and the sugar and rice crops have certainly been able to about hold their own, even on the depressed prices.

Taking it all in all, there is no need for any panicky feeling among the agriculturalists, and as they are the largest part of the purchasers in the South, improvement must gradually commence.

We believe, however, from the serious financial conditions of the last few months, the great falling off in the purchase of supplies by the consumers and the accumulation of stocks that has naturally resulted, and from the fact that this is a Presidential election year, we are likely to have a limited demand, or a hand to mouth purchasing condition for 1908. Therefore, we think that all of the leading manufacturers in the country will probably be obliged, in order to create a demand to greatly reduce their prices, as we do not believe that a sound condition will obtain until commodities and labor are on a lower basis of cost than the prices that have been in effect for the last six months or a year.

We do not feel depressed with the situation here, but

as we said before, we believe it is going to be rather a lean year for merchants, and that by the end of next year business will get pretty near up to its former standard.

In the meanwhile prices will average considerably lower, and the cost of producing goods will be greatly lowered to the manufacturer by the reduction in the cost of labor and material.

It will take conditions of this kind particularly to revive the lumber industry, as building operations will not assume their former proportions until the costs of materials and construction are very much lowered. As Louisiana is now the second largest lumber State in the Union, and has a large number of mills, most of which are closed down, we cannot see any immediate good that will result in this trade to bring the mills back to running to their full capacity at least for the next five or six months, and as far as we hear the manufacturers of yellow pine lumber have reduced their prices to conform to the times. We presume that that will be the case also in the iron, steel and metal trades in general, and when all building material has reached this point we look for a strong, healthy and continuous demand in Hardware and other lines of kindred jobbers' supplies.

Cleveland.

THE W. BINGHAM COMPANY.—With the advent of the new year, activity in all branches of general Hardware, mining, milling and manufacturers' supplies is quite prevalent. On account of the many inquiries for material for the next six months, and some inquiries for prices on commodities to be used during the whole of 1908, the outlook for a good, fair trade is quite hopeful.

Many business houses have completed their inventory of stock on hand, and their books will soon be closed against the past year, and we believe the balance will show on the right side of the ledger in spite of the adverse times we have passed through in the past three months.

We, like some other jobbers, are taking into our warehouses goods ordered months ago to fill up our depleted stocks in many lines, and we shall be ready, like many other jobbers, who did not get stampeded and cancelled their orders, to serve our many customers promptly and give them many good bargains.

As is usual at this time of the year, there are some changes in prices taking place; some higher and some lower, but no great or radical changes have been announced, and we do not look for any extreme changes.

Many orders for spring goods that were placed with us months ago are now going forward, such as Steel Goods, Shovels and Spades, Wire Cloth, Poultry Netting, Freezers, Lawn Mowers, Hardware grade of Wire Cloth, Butts, Strap Hinges, Locks, Knobs, medium priced Lock Sets, Step Ladders and Screen Doors and Windows. The jobbers who have the goods in stock and can ship promptly, and the retailers who sort up their stocks will be the ones that will get the trade and make the profit.

Mills that were shut down for repairs and other causes are starting up, and many men are returning to their workshops.

Money matters are getting in better shape daily, and business in general is beginning to float along in its natural and easy channel. You cannot keep a good thing down long; there are too many good, wise and patriotic business men at the helm throughout the land to allow pessimists and demagogues to flourish very long in this, our great and glorious Union.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—We are pleased to state that we can see a considerable improvement in business conditions during the past two weeks. Most of our salesmen are now on the road, and the majority of them are doing a good business, some of them exceedingly good, and are sending in some nice orders for spring goods.

While we do not expect the month of January to be as large as last year, it is going to make a fairly satisfactory showing. We think business will get better as the season progresses, and would not be surprised to see February and March very heavy months.

The banks in this city and throughout the South have practically resumed their normal condition, and are now giving the public the usual banking services and facilities. Collections continue to be exceedingly good.

We regard the panic now entirely a thing of the past, and hope that everybody will endeavor to forget it.

Portland, Oregon.

FAILING, HAINES & McCALMAN.—With the first of the year, conditions are looking considerably better in this section of the world than we had any reason to expect. Business has begun to pick up, and it looks as though there would be still further improvement. From the writer's conversation with men engaged in other lines, it would appear that prospects for other lines in this territory are equally as good as the prospects for the Hardware dealer. The general consensus of opinion seems to be that this year will be a prosperous and busy year, but we do not except to be so rushed and so busy as we were in 1907. We, however, expect it to exceed the year 1906.

Local conditions financially are looking much brighter. Notwithstanding the failure of four banks in this city, Portland was almost the first city of its size to go on an absolutely cash basis. Commercial loans are being made, although not as freely as before the panic, with due regard to the general conditions, and no one who has a deserving proposition finds himself unable to obtain the backing. As to the four banks that closed their doors, one, the Merchants' National, expects to open shortly with the full approval of the Controller of the Currency. The depositors of the Title Guarantee & Trust Company have been guaranteed against loss by W. M. Ladd, who was at one time a director of that institution, and felt himself morally, though not legally, bound to see them safe. The prospect is bright for the reorganization of the Oregon Trust & Savings Bank, and its amalgamation with another bank in this city. The only bank whose depositors are not reasonably certain of getting their money back is the Commonwealth Trust Company, whose deposits total less than \$10,000.

This state of affairs has naturally greatly increased the confidence of the public in the future, and it will have a great deal to do with helping us to have a prosperous year. All businesses are in a prosperous condition, except lumbering. This, however, is beginning to revive somewhat and looks better than two weeks ago. Should the Interstate Commerce Commission decide in favor of the contentions of the Oregon and Washington lumbermen, we will see this year a very sudden and very remarkable development in this important industry.

It remains only to be said that crops look as well as they ever do at this time of the year and that our collections continue to be much better than we have any reason to expect in the present disturbed state of affairs. We only hope all other sections of the country are in as good shape as the Pacific Northwest is, for if they are then we all can look forward with confidence to the year upon which we have entered.

NOTES ON PRICES.

Wire Nails.—The American Steel & Wire Company, after a very careful canvass of the whole situation and after conferences with the other manufacturers, has decided to maintain present prices on Wire Nails and other Wire products, the announcement being made by F. Baackes, vice-president and general sales agent of the company, in the following letter to the trade under date of January 13:

"This is to advise you that our present prices on Wire products are reaffirmed, and there will be no reduction for the spring trade. You can, therefore, with confidence advise your trade of this action, and inasmuch as there has been a great curtailment of production during the past four months, and the stocks of the trade have been reduced to a minimum, we advise that you anticipate your wants as far ahead as possible, so you will have the goods when the demand springs up.

Under the policy thus determined upon the leading interest will have, it is understood, the co-operation of

the other manufacturers who have expressed their approval of it and their purpose to maintain prices on the present level. The stocks in the hands of the mills are unquestionably exceptionally low, especially as full advantage has been taken of the opportunity afforded by the practical cessation of demand for a month or more to overhaul and repair the mills. The result has been that they have on hand much less than a normal supply for the spring trade. At the same time the market is thought to be exceptionally bare of goods as both jobbers and retailers as well as the large consumers have been going very slow in the matter of purchases and have permitted their stocks to run down to a minimum. It is confidently expected that orders, now that the manufacturers have declared their policy, will begin to set in, probably for moderate quantities at first, but sufficient to replenish badly broken assortments, and with a growing volume of business as the condition becomes more settled and trade resumes at least part of its customary volume. Quotations are unchanged, as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots, to retail merchants.....	2.10

New York.—Merchants are buying meagerly and with only such frequency as to supply present demand. It is anticipated that the announcement made by the American Steel & Wire Company that it would make no reduction in price for the spring trade, will increase confidence in the stability of the market. Local jobbers and Nail houses are holding small lots at store at \$2.30, base. This price is, however, shaded by some sellers, while others are adhering to it.

Chicago.—What effect the reaffirmation of prices on Wire products by the American Steel & Wire Company, coupled with the assurance that there will be no reduction for the spring trade, will have on the placing of new business for this period will be watched with interest. There was a growing feeling that prices would be reduced and as long as uncertainty on this point existed buyers would naturally hesitate to place orders for forward requirements. Now that the price has been announced there will be nothing to hinder an unrestricted movement when the demand warrants a resumption of buying. Trade at present is extremely quiet, though it is said that stocks in all hands are light. Quotations are as follows: \$2.23 in car lots to jobbers, and \$2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—The Wire Nail trade has been in a waiting attitude, buyers believing that very soon there would be an announcement from the manufacturers of a positive nature in regard to the maintenance or readjustment of prices. In this condition, orders have been scarce, representing actual needs of customers and for small lots. It is believed now that the policy of the manufacturers as to prices has been determined there will be a perceptible increase in demand for Wire Nails, stocks held by jobbers all over the country being extremely light. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots, to retail merchants.....	2.10

Cut Nails.—There is no noticeable change in the Cut Nail market, regular quotations remaining as before. The reaffirming of prices on Wire Nails will probably have an excellent effect on the makers of Cut Nails, and with a largely diminished production it is hoped that prices will on the whole be at least fairly well maintained. During the present week there has set in a better demand for Nails than for some time and it looks as if the trade were disposed to order in quantities to cover their needs. A better feeling, though thus far with a moderate volume of business, certainly characterizes the market. We continue to quote as before, \$2.05 base for carload lots f.o.b. Pittsburgh with occasional concessions.

New York.—Demand for Cut Nails is proportionately small as compared with that for Wire Nails. Prices

which have been ruling were reaffirmed at a recent meeting of the Cut Nail Association. Local jobbers and Nail houses are holding small lots at store at \$2.30 base. This price is, however, shaded in some cases.

Chicago.—Demand is extremely light, and stocks are being diminished very slowly. Jobbers are buying only for assortment since prices show too little stability to warrant liberal stock purchases. For the small orders that are filled from jobbers' stocks prices are fairly well maintained. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, \$2.38; to retailers, \$2.43; steel, to jobbers, in carloads, \$2.28; to retailers, \$2.33.

Pittsburgh.—The situation in the Cut Nail trade is extremely quiet, some of the mills being closed, while others are operating to very limited capacity. Demand is very light, and only for small lots for actual needs. Prices continue to be shaded, even on the small amount of new business that is being placed. We quote Steel Cut Nails at \$2 to \$2.05, f.o.b. Pittsburgh, for carload lots, and small lots at \$2.10, to which freight to destination is added. Iron Cut Nails are being held at about \$2.15, at mill.

Barb Wire.—The reaffirmation of prices on Barb Wire and other Wire products is the principal event of the week, and puts these lines on a basis at which it is expected that there will be a resumption of purchases. The fact that the farming population is in excellent shape financially leaves the way clear for a good volume of business, and while there is no reason to expect anything like speculative buying the manufacturers are confident that a good deal of Wire will be called for to meet the present needs of the trade. Meanwhile, existing quotations are quite regularly maintained as before, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Chicago.—Inquiries from the Southwest are beginning to come in, and in view of the announcement that Wire prices for the spring trade will be maintained at a fairly good and early demand is looked for from this section. There is apparently no reason why there should not be at least a normal consumption of Fencing Wire since there is no impairment of purchasing power in the territory where it is most used. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.38; Galvanized, \$2.68; to retailers, car lots, Painted, \$2.43; Galvanized, \$2.73; retailers, less than car lots, Painted, \$2.55; Galvanized, \$2.85; Staples, Bright, in car lots, \$2.35; Galvanized, \$2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—As in the case with Wire Nails, the Barb Wire trade has been in a waiting condition, merchants not having been disposed to place orders until some definite announcement from the manufacturers has been made as to the course to be pursued in regard to prices. Practically no new tonnage was placed during the past week, and shipments by the mills were of very limited volume. Now that it has been decided to maintain present prices, it is expected that orders will begin to be placed with confidence. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Plain Wire.—Within the past few weeks the manufacturers of Fencing and other products, of which Plain Wire is the raw material, have been receiving shipments and placing some orders for the season's supply. The announcement by the leading manufacturers of their determination to maintain prices is pretty sure to act as a stimulus to buying, and from both manufacturers and merchants a quickened demand is expected. With a moderate stock in the warehouses of the manufacturers and the diminished production at this time it is thought by some that difficulty may be experienced before the season is over in getting orders executed with comfortable promptness. Present quotations are as follows, f.o.b.

Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

Chicago.—There has been practically no new business being offered and specifications against contracts are light. With the reassurance offered by the reaffirmation of prices for the coming season there will be nothing to retard the placing of orders when conditions favor the resumption of buying. Quotations are as follows: In car lots, to jobbers, \$2.08, f.o.b. Chicago, and to retailers, \$2.15.

Pittsburgh.—Very little new tonnage is being placed, but there is a moderate amount of specifying on contracts. It is believed the demand for Plain Wire will soon show material improvement, as announcement from the manufacturers of their decision to maintain prices has been made. Quotations for base numbers 6 to 9 are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

Oilers.—A somewhat firmer tone characterizes the market for Oilers. Quotations of the leading manufacturers exhibit greater steadiness and regularity than a few weeks ago.

Sash Cord.—A conference of numerous Sash Cord manufacturers was held last week with a view to improving, if possible, the unsettled condition of the market. As a result several producers have established an extreme price of 22 cents per pound, representing some advance over the figures recently ruling. It remains to be seen what will be the attitude of jobbers whose contracts, entered at the extreme low level, would enable them to undersell the manufacturers.

Sash Weights.—Lower quotations on Sash Weights are generally reported on the part of local foundries in various sections, due to declines in scrap and active competition for the small business offering.

Gilt Furniture Nails.—The market for Gilt Furniture Nails has taken on a somewhat more regular appearance, and prices are somewhat stiffer, as some manufacturers have withdrawn their recent extreme quotations.

Burners.—Quotations representing a moderate reduction in prices have been sent out by a leading manufacturer of Lamp and Lantern Burners.

Hammers and Sledges.—Leading manufacturers of Hammers and Sledges have reduced their prices 10 per cent. or more. The market on heavy lines on retail lots may be represented by a discount of 80 and 2-10 per cent., and on the lighter lines by 80 and 10 per cent.

Asbestos.—There has been some advance in certain Asbestos products by some of the independent manufacturers who have advanced prices to more nearly an equality of the makers who adhere to regular prices. On Asbestos Building Paper and Felt some of the advances reach \$5 per ton. There is also irregularity on Mill Board in sheets, the makers in agreement not only meeting prices made by independent makers, but in some instances giving lower quotations. Asbestos Pipe Coverings have been advanced about 10 per cent.

Peck, Stow & Wilcox Company.—The Peck, Stow & Wilcox Company, Southington, Conn., and New York City, under date of the 10th inst., issues a circular in which it is stated that the high costs of material and labor which prevailed during the last six months of 1907 would have necessitated, under normal conditions, a corresponding advance in the selling price of the company's product, which it had expected to announce previous to the above date. After careful consideration of existing conditions the company has, however, decided to let its general quotations remain as heretofore, all prices being subject to change without notice.

Axles.—Volume of business in Axles is unusually light, although it is generally rather quiet at this season of the year. Manufacturers state, however, that the prices established in the fall have been fairly well maintained, and while orders are in moderate volume, the

condition is regarded as, on the whole, fairly satisfactory. An early increase in business is anticipated.

Leather Belting.—Reflecting some weakness in the leather market, prices on Belting have recently shown a declining tendency, which is especially marked on competitive grades.

Bolts and Nuts.—Although prices have been formally reaffirmed for this month, the market for Bolts and Nuts is not firm, special concessions being reported here and there by one and another manufacturer. Actual buyers are able to obtain low prices on moderate quantities.

Steward & Romaine Mfg. Company.—The Steward & Romaine Mfg. Company, Philadelphia, Pa., manufacturer of Expansion Bolts, Toggle Bolts, &c., announces that beginning this month discounts to the trade will be as follows: No. 13 Double Expansions, expansions of annealed steel, 55 per cent.; No. 1 Single Lock Nutted, 55 per cent.; No. 100 Double Jaw Single, 50 per cent. In lots of 500 and over an extra 5 per cent. is offered on the above lines. On Lag Screw Expansion Bolts the discounts remains the same, 66 2-3 per cent.

Binder Twine.—The price of Binder Twine has not yet been announced by the largest producer. A few weeks ago indications were that Sisal and Standard Twine would possibly be quoted at 8 cents for small lots. Since that time the planters have organized and arranged to get bank advances on their Fiber, and at present it is understood that no Fiber is being offered for sale. It is reported that manufacturers have as yet purchased only a small part of their season requirements, so it is difficult to form a correct idea of the price Twine will start at.

Conductor Elbows and Shoes.—Current prices on Conductor Elbows and Shoes are, apparently, little affected by the declines in Sheets, as the market has long been in such a demoralized condition that quotations did not bear the usual relation to productive costs. Discounts of 85 to 85 and 10 per cent. on standard gauges are commonly reported at the present time.

Tinware, Galvanized Ware, &c.—The expected readjustment of prices on Tinware, Galvanized Ware, &c., consequent to recent declines in Sheets and Tin Plates, has not yet been made. It is understood that conferences are under way, and announcement of reductions in one form or another are looked for daily.

Chain.—Prices on Pump Chain recently announced by several manufacturers show advances of $\frac{1}{2}$ to $\frac{3}{4}$ cent. The market may be represented by a quotation of $4\frac{1}{4}$ cents per pound.

Coil Chain.—Coil Chain continues to exhibit the irregularity observed during the last three or four weeks. Larger manufacturers are apparently allowing the market to shift for itself, and smaller producers seem to be getting the most of the business, which can hardly be very profitable. A quotation on $\frac{3}{8}$ -in. of \$3.75 per 100 lb., f.o.b. Pittsburgh, represents the market in a general way.

Rope.—Manufacturers refer to demand being fair, but not as good as they anticipated it would be after the first of the year. Collections are improving. A stiffening in Rope prices, as the result of the higher values of Fiber, would be appreciated by Rope manufacturers, as many have high priced Fiber on hand. Manufacturers are not accumulating stocks to any extent, so that early orders will stand the best chance of being filled promptly, when spring demand commences. The following quotations fairly represent the market for base sizes: Pure Manila, $11\frac{1}{2}$ cents; B quality grades down to $8\frac{1}{2}$ to 9 cents; Pure Sisal, 8 cents; lower grades Sisal, 7 to $7\frac{1}{4}$ cents; No. 1 Jute, $\frac{1}{4}$ -in. and up, $7\frac{1}{2}$ cents; No. 2 Jute, 7 cents.

Window Glass.—Succeeding weeks record a smaller quantity of Glass being made, as additional Glass factories suspend operations, owing to the inability of getting workmen at wages which would yield manufacturers profit. The smaller the quantity of Glass produced under ruling conditions is regarded as best for the manufacturers. The low prices made by manufacturers, which have ruled for some time, have failed to stimulate demand to any marked extent, buying being restricted to assorting up stocks. A consumptive demand for Glass

will undoubtedly show itself in time, as building operations are not going to be entirely suspended. Under present conditions jobbers' prices are more or less elastic. Prices recommended at the last meeting of the Eastern Window Glass Jobbers' Association are as follows: In the States of New York and New Jersey 90 and 15 per cent. discount for single and 90 and 20 per cent. discount for double strength Glass. Similar prices are supposed to prevail in Pennsylvania, but in New England discounts are said to be fixed at 90 and 20 per cent. for single and 90 and 25 per cent. discount for double strength Glass.

Spirits Turpentine.—As a result of the manipulation of the Southern market prices continued to advance last week. Buyers considered the 12-cent advance in prices too rapid, so that purchases at this point have been confined to small lots. The New York market is represented by the following quotations: Oil Barrels, $55\frac{1}{2}$ to 56 cents; Machine Made Barrels, 56 to $56\frac{1}{2}$ cents.

Linseed Oil.—Business at this point continues light, being confined to small lots, covering immediate requirements. Crushers are unwilling to accept orders for car lots for delivery covering a longer period than to March 1. It is stated upon reliable authority the manufacturers cannot sell State and Western Oil at 40 cents per gallon and make any profit, owing to the high priced Seed on hand. Prices in five barrel lots are about as follows: State and Western Raw, 42 to 43 cents; City Raw, 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM OGRAM & TREW, who have bought out the Hardware, Stove, Implement, Paint and Sporting Goods business of Meiner Hardware Company, Creswell, Ore.

FROM HAWS HARDWARE & FURNITURE COMPANY, Minden, Neb., which has just completed and equipped a substantial modern store building into which it has moved its Hardware, Stove, Paint, Sporting Goods and Furniture business.

FROM GALOGAN & HEALY, Elysian, Minn., who are about to open a Hardware, Stove, Implement and Paint store.

FROM KENNERLY-SPRAGINS HARDWARE & LUMBER COMPANY, Ardmore, Okla., which has been incorporated with a capital of \$100,000.

FROM LONG-LEWIS HARDWARE COMPANY, Bessemer, Ala., successor to Bessemer Cornice Works and Lewis Hardware Company, who desire catalogues of Hardware, Mill Supplies, Paints, Wagon and Buggy Material, &c.

FROM H. W. SHEELER, Red Lion, Pa., who will be pleased to receive catalogues relating to Shelf and Heavy Hardware, Paints, Oils, Sporting Goods, Wood and Willow Ware, Harness, &c. Mr. Sheeler has just completed an addition, 40 x 50 ft. in size, to his store building.

THE second annual convention of the salesmen of the Berger Mfg. Company, Canton, Ohio, was held during the week beginning December 30. It was attended by representatives of the company from all parts of the country. The conference was fittingly terminated on the evening of January 2 with a very enjoyable banquet tendered by the company at the Courtland Hotel, at which more than 60 persons sat down. One of the features of the banquet was the presentation to Edward Langenbach, general manager of the company, of a clock as an evidence of the esteem in which he is held by the selling representatives of the company.

RETAIL HARDWARE CONVENTIONS.

During the next two or three months the following retail Hardware conventions will be held. Where the asterisk appears elaborate plans are being made by the association officials for the accommodation of Hardware exhibits by manufacturers and jobbers.

- INLAND EMPIRE ASSOCIATION, Spokane, Wash., January 15, 16 and 17. Secretary, E. W. Evenson, Spokane.
- OREGON ASSOCIATION, Portland, January 21 and 22. Acting Secretary, C. D. Lowndale, Portland.
- TEXAS ASSOCIATION,* Dallas, January 21-23. Secretary, J. W. McManus, Dallas.
- PACIFIC FEDERATION, Portland, Ore., January 23-25. Secretary, E. W. Evenson, Spokane, Wash.
- NORTH DAKOTA ASSOCIATION, Fargo, January 28-30. Secretary, C. N. Barnes, Grand Forks.
- SOUTH DAKOTA ASSOCIATION,* Aberdeen, February 4-7. Secretary, H. E. Johnson, Redfield.
- WISCONSIN ASSOCIATION,* Milwaukee, February 5-7. Secretary, C. A. Peck, Berlin.
- CONNECTICUT ASSOCIATION, Meriden, February 10 and 11. Secretary, James de F. Phelps, Windsor Locks.
- KENTUCKY ASSOCIATION, Louisville, February 11-13. Secretary, John R. Sower, Frankfort.
- NEBRASKA ASSOCIATION,* Lincoln, February 11-14. Secretary, J. Frank Barr, Lincoln.
- INDIANA ASSOCIATION,* Indianapolis, February 18-21. Secretary, M. L. Corey, Argos.
- IOWA ASSOCIATION,* Cedar Rapids, February 18-21. Secretary, A. R. Sale, Mason City.
- NEW YORK ASSOCIATION,* Buffalo, February 18-22. Secretary, John B. Foley, Syracuse.
- PENNSYLVANIA ASSOCIATION,* Altoona, February 24, 25 and 26. Secretary, J. E. Digby, McKees Rocks.
- OHIO ASSOCIATION,* Columbus, February 25-27. Secretary, Frank A. Bare, Mansfield.
- MINNESOTA,* St. Paul, February 25-28. Secretary, M. S. Mathews, Guaranty Building, Minneapolis.
- ILLINOIS ASSOCIATION,* Peoria, February 26-28. Secretary, L. D. Nish, Elgin.
- NEW ENGLAND ASSOCIATION,* Boston, March 11 and 12. Secretary, Chas. L. Underhill, Somerville, Mass.

Iowa Retail Hardware Association.

The Iowa Retail Hardware Association will issue an official gazette, in which the full proceedings of the four-day convention on February 18-21 will be given, together with 50 pages illustrating Iowa Hardware store interiors. The association is inviting the attention of manufacturers and jobbers to the benefit to be derived from advertising space in the gazette, each advertiser being guaranteed a location opposite a page of the proceedings or an illustrated page. It is intended to print and mail 2500 copies of the gazette. Particulars in regard to terms, &c., may be obtained from A. R. Sale, secretary, Mason City. The stamp reproduced herewith is being used freely in the correspondence of the association. It will be observed that it calls attention in an effective way to the time and place of the approaching meeting.

Ohio Hardware Association.

Frank A. Bare, secretary, Mansfield, states that members of the Ohio Association are already sending in suggestions for the next convention, which is regarded as indicating that the merchants of the State are thinking of the annual meeting earlier than usual. It is intended in connection with this convention to have one night session, as this feature seems to be meeting with the hearty approval of the members. Many applications for membership are reported and a very large and enthusiastic gathering at Columbus on February 25, 26 and 27 is looked for.

B. E. Walter, S. Milwaukee, Wis., who has conducted the Walter Hardware Company for the past 12 years, has retired from the business, selling his interest to his son, A. W. Walter, who will run the business in the future.

Display Stand for Wrenches.

THE FRANK MOSSBERG COMPANY, Attleboro, Mass., has perfected the ingenious metal display stand for Wrenches shown in the accompanying illustration. It is 17 in. high, with a base 7 in. in diameter. It is designed to accommodate a representative assortment of the company's goods, being capable of holding 20 different types and sizes. The stand is nickel plated and highly finished, and when mounted full of Wrenches it is said to make an attractive window or showcase dis-



Frank Mossberg Company's Display Stand for Wrenches.

play. To introduce its complete line the company offers one of the stands with three different assortments according to the requirements of the trade.

Post E. of the Travelers' Protective Association, Lafayette, Ind., and leading merchants of that city have sent to Vice-President Fairbanks and to the Indiana Senators and Congressmen at Washington an appeal against the parcels post bill, on the ground that it will harm the business interests of the country, especially the retail stores in small towns, in addition to causing a great loss to the Postal Department revenue. The petition says, in addition: "We believe that a Government department of this kind should be self-supporting; that its affairs should be so administered that it could not incur losses to be charged to the deficit account. We believe it is wrong to tax any class of citizens for the benefit of another class, which would in this case tend to build up a monopoly and trust which would be against the public welfare. We believe that if any changes are made in the postal rates they should be reduced on letters and increased on bulky packages."

Among the manufacturing interests treated in "Marshalltown Illustrated," which has been issued under the supervision of the Retail Merchants' Association of Marshalltown, Iowa, is that of the Marshalltown Buggy Company. This company was organized two years ago and now employs 165 men. During the past year the company manufactured and sold more than 4600 vehicles, and with enlarged capacity expects to turn out between 6000 and 7000 during 1908. The officers of the Marshalltown Buggy Company are L. M. Osborne, president; W. A. Tuttle, vice-president; F. E. Gates, manager, and Ray R. East, secretary-treasurer.

THE C. J. ROOT COMPANY has succeeded to the business of the late C. J. Root, manufacturer of Wrought Brass Hinges, Counting Machines, Specialties, &c., Bristol, Conn. The officers of the company are C. F. Barnes, president, and John T. Chidsey, secretary and treasurer.

Simonds' Seventy-fifth Anniversary.

THE SIMONDS MFG. COMPANY, Fitchburg, Mass., has just issued a handsome and comprehensive book souvenir, commemorative of the establishment, progress and industrial advance of the business since its founding in 1832 by Abel Simonds, father of Daniel Simonds, who is now president of the company. Originally Scythes were made, followed by Machine Knives, Mower and Reaper sections, Saws for all purposes, from power to hand, and Files for mechanics. Since 1900 the company has made its own steel in Chicago, and more recently has acquired a large File plant in Fitchburg, in addition to the works proper there. The plant of the Canada Saw Company of Montreal, Toronto, and St. John, was also acquired in January, 1906, a new plant being erected at Montreal and the business conducted under the style of Simonds Canada Saw Company.

The book throughout is highly artistic, both in conception and execution. The letter-press occupies most of the early pages, the remainder of the volume containing illustrations, more than 400 in number, of works, domestic and foreign branches, office scenes, officials, managers and specialists, superintendents, salesmen, employees, "the old guard" of over 20 years' service, working staff at mills and the many branches, a page at the end showing four generations of the Simonds family.

Referred to Our Readers.

THE following inquiry from a Southern house for a method of keeping track of stock is respectfully referred to our readers. We shall value any pointers or suggestions with which merchants may be good enough to favor us:

Please let us know if you have any stock form of sheets suitable for keeping track of goods. If not, do you know of any jobber that has a good system for keeping tab on stock at all times? We are weak in this particular, and would like to be able to adopt some system whereby we can have a card system that will keep us in touch with what we have on hand and what we have sold of each item for some time back. If you can assist us it will be duly appreciated.

Covert Mfg. Company's Catalogue.

THE COVERT MFG. COMPANY, Troy, N. Y., has just issued its new catalogue No. 25 referring to its well-known Square Brand line of Harness Hardware, &c. The book is of handy size, 5½ x 8 in., and contains 144 pages, divided into four sections. Section 1 includes Snaps of all descriptions; section 2 covers Hitching Posts, Weights, Jacks, Dees and other miscellaneous articles; section 3 refers to all kinds of Chains, and section 4 to Rope and Web Goods and special Snaps for Fire Harness and Electrical Equipment. The goods are fully described, and there is an elaborate index of 11 pages arranged in both alphabetical and numerical form, which should make the catalogue a great convenience to the trade.

The Bernard Gloekler Company.

THE BERNARD GLOEKLER COMPANY, Pittsburgh, manufacturer of Eclipse Refrigerators, Refrigerating Machinery and Butchers' Supplies, has added a new line to its products, consisting of hotel kitchen equipment, and the business will hereafter be able to contract for everything required in hotel, restaurant or public institutions, such as Burton Steel Ranges, French-American Chophouse Broilers, &c. A sample room has been fitted up on the second floor of the company's building, where a complete line of this equipment is shown.

THE Twist Drill department of the Union Twist Drill Company, Athol, Mass., is now in operation, marketing the wire sizes and adding larger sizes as rapidly as possible. The company states that the delay in the production has been principally due to the care that has been taken with a view to turning out tools of superior quality.

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Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

C. E. BONNER MFG. COMPANY, Chrisman, Ill.: Illustrated catalogue and price-list of Victor Chain Wrenches, Wire Pliers and Cutters, Fence Tools, Engineers' Wrenches, &c.

GENERAL AUTOMOBILE SUPPLY COMPANY, 11 Warren street, New York: Illustrated catalogue covering an extensive line of Automobile Accessories and Supplies.

JOHN A. GREGG COMPANY, Burlington, Iowa: Memorandum book containing announcement of the manufacturers represented by the company with lists of their products.

INDIANA MFG. COMPANY, Peru, Ind., for whom Wm. A. Stokes & Co. are agents, 30 Warren street, New York: Illustrated catalogue and price-list of North Star Refrigerators.

I. DURLACH, 54 Vesey street, New York: Illustrated circulars referring to Ash and Garbage Cans, Town Improvement Cans, Asphalt Scrapers and other sheet metal specialties.

S. R. DROESCHER, 79 Warren street, New York: Illustrated catalogues referring respectively to Hones and Oil Stones and Key Rings, Key Chains, Watch Chains, Dog Chains, &c.

J. H. EDWARDS, 59 Park Place, New York: Illustrated price-list of Goshen and Tiger Galvanized Steel Tanks and Troughs, Goshen Tank Heaters and Feed Cookers and Kelly and Goshen R. F. D. Mail Boxes.

J. W. FISKE IRON WORKS, 39-41 Park Place, New York: Large illustrated catalogue referring to an extensive line of Stable Fixtures.

WHITMAN & BARNES MFG. COMPANY, Chicago, Ill.: Circular illustrating Mounted Grindstones, with wooden and steel tubular frames.

W. & B. DOUGLAS, Middletown, Conn.: Illustrated catalogue, 1908, devoted to Hand and Power Pumps, Hydrants, Hydraulic Rams, Well Fixtures, Garden Engines, &c.

EMERSON ELECTRIC MFG. COMPANY, St. Louis, Mo.; New York office, 136 Liberty street: Catalogue No. 4700, under date of January 1, 1908, devoted to Alternating Current Fans, including Desk, Bracket, Ceiling and Column Styles.

WIARD PLOW COMPANY, Batavia, N. Y.: Catalogue No. 33, relating to Plows, Hay Rakes, Bean Harvesters, Hand Corn Planters, Adjustable Weeders, Harrows, &c.

POTTER MFG. COMPANY, Geneva, Ohio: Illustrated price-list of Tools and Specialties, including Housekeepers' Hardware, Cross Cut Saw Handles and Garden and Floral Tools.

E. H. H. SMITH SILVER COMPANY, Bridgeport, Conn.: Circular illustrating numerous designs of Silver Plated Flatware.

J. W. BUCKLEY RUBBER COMPANY, 69 Warren street, New York: Illustrated price-list of Hose, Belting, Packing Gaskets, Mats, Matting and Mechanical Rubber Goods.

CARPENTER & BAYLES, 91 Chambers street, New York: Illustrated price-list of Hickory, Ash and Small Tool Handles.

BURGER & BAUMGARD, 105 Chambers street, New York: Illustrated circulars referring to Challenge Axes, Scythes, Hoes, Pruners, &c.

RAZORINE MFG. COMPANY, 69 Warren street, New York: Illustrated circular referring to Shaving Specialties.

NATIONAL METAL FABRIC COMPANY, 84 Chambers street, New York: Illustrated booklet referring to the company's Expanded Metal Fabric and its uses.

LANCASTER MACHINE & KNIFE WORKS, Lancaster, N. Y.: Catalogue No. 16, 1908, illustrating Braces, Extension

Bit Holders, Chucks, Breast Drills, Oval Drill Sockets, Oval Steel Sleeves, Drifts or Center Keys, Oval Taper Shank Drills, Machine Knives, Planer Head Bolts, &c.

IVER JOHNSON'S ARMS & CYCLE WORKS, Fitchburg, Mass.: Attractive illustrated catalogue of Bicycles for 1908.

ECLIPSE NOVELTY WORKS, Pulaski, Pa.: Illustrated booklet referring to Boyd's Revolving Flower Stands.

HANCHETT SWAGE WORKS, Big Rapids, Mich.: Illustrated catalogue referring to an extensive line of Automatic Filing Room Machinery and Saw Fitting Tools and Parts.

TURNER & SEYMOUR MFG. COMPANY, Torrington, Conn.: Illustrated catalogue of Gas and Electric Portables, Ornamental Shade Rings, &c., together with appendix showing new designs.

TRADE ITEMS.

AFTER 50 years the Boetticher-Kellogg Company, Evansville, Ind., reincorporated its business January 1, the old charter having expired by limitation. The capital stock of the new corporation is \$300,000, representing a large increase over the former amount. The incorporators are Edw. Boetticher, W. H. Boetticher, Oscar Boetticher, Carl F. Botticher and O. H. Kellogg, Edward Boetticher being president; W. H. Boetticher, vice-president, and Oakley H. Kellogg, secretary and treasurer.

THE SIMMONS HARDWARE COMPANY, St. Louis, Mo., at a recent meeting of its Board of Directors re-elected the following persons who compose its staff of officers: E. C. Simmons, chairman of the board; W. D. Simmons, president; G. R. Barclay, A. W. Douglas, F. J. Semple, E. H. Simmons, G. W. Simmons and J. E. Smith, vice-presidents; A. E. Dann, treasurer; William Enders, secretary; L. S. Haslam, assistant treasurer; F. W. Allen, assistant secretary; O. F. Richards, general manager.

W. H. HENDER died at his home in Davenport, Iowa, December 28. Mr. Hender was a veteran stove merchant and was for a number of years a member of the firm of Washburn & Hender. He was 72 years of age, having retired from active business on his sixtieth birthday, when he turned over his business interests to his three sons, by whom he is survived.

BELIEVING that dull times call for increased rather than diminished effort in pushing business, the Norvell-Shapleigh Hardware Company, St. Louis, Mo., has added 25 traveling salesmen to its force, having opened up that many new territories. The enterprise back of such expansion at the present time should be rewarded by profitable results.

THE published report to the effect that the Heusinger Hardware Company, San Antonio, Texas, has filed a petition in voluntary bankruptcy, is stated by A. Heusinger, president of the company, to be without foundation, and furthermore the company was never in better condition than at the present time. The fact that it is discounting its bills is referred to as ample refutation of the prejudicial financial report.

THE new British patents and designs act became operative January 1. This act makes compulsory the working "to an adequate extent" in the United Kingdom of patents having the benefit of the protection of the British patent laws, and will doubtless force the manufacture in the United Kingdom of many articles now made in the United States for export to the United Kingdom. Work will thus be furnished to British labor, which is what the act is intended to accomplish. Its effect will probably be most striking in connection with the manufacture of shoe machinery.

THE KANAWHA NAIL & IRON COMPANY, manufacturers' agent and jobber of Hardware, Charleston, W. Va., has removed from 317 Clendennin street to 428 State street.

WILLIAM H. BENSE, for many years connected with the Kinsley Iron & Machine Company, Canton, Mass., which concern recently went out of business, has established himself at 170 Summer street, Boston, as New England sales agent for the Logan Iron & Steel Com-

pany, Burnham, Pa., and the E. J. Gardner Axle & Machine Company, Carlyle, Pa.

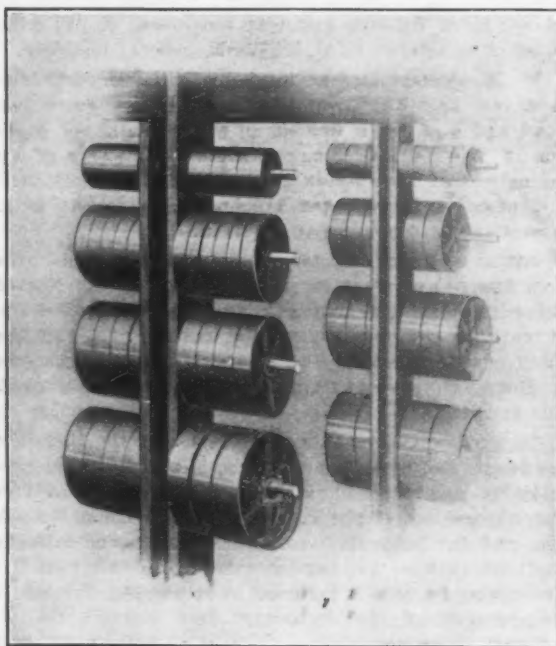
THE AMERICAN WRINGER COMPANY, 99 Chambers street, New York, recently held its annual gathering of salesmen, managers and officers in New York City at which plans for the business of the new year were discussed, and views exchanged as to marketing the large lines of Wringers made by the company. At the close of the conference a sumptuous banquet was tendered the force at the Hotel Astor.

THE secretary's report to the Auditing Committee of the Hardware Dealers' Mutual Fire Insurance Company of Wisconsin, December 27, 1907, shows that the losses paid during 1907 aggregated \$7,438.97, and that the assets on the 27th ult. were \$28,123.40. During 1907 1252 policies amounting to \$1,869,075 were written, with applications on file to write amounting to \$127,350. The profit for the year exceeds \$12,000.

THE St. John Iron and Hardware Association held its annual meeting at St. John, N. B., on Monday, 6th inst. The following officers were chosen for the ensuing year: W. S. Fisher, president; M. F. Irwin, vice-president; Fred C. Owens, secretary-treasurer, and W. H. Thorne, Thomas McAvity and M. E. Agar directors.

A Good Pulley Rack.

THE Hardware firm of Lyon & Grumman, Bridgeport, Conn., does an extensive mill supply business. In the accompanying drawing is illustrated the method devised by the firm for accommodating its large stock of Pulleys. They are kept in the basement, being easily moved in or out by means of a chute. Heavy boards are erected in pairs face to face, as shown in the illus-



Pulley Rack of Lyon & Grumman.

tration. Holes are bored in these uprights, through which are run short pieces of 2-in. gas pipe, forming strong pegs from 2 to 3 ft. long on either side. The Pulleys are grouped according to size on these projecting ends of pipe, with larger sizes at the bottom. They are easily slipped on and off and present a fine, orderly appearance. This method of arrangement is economical of space, as the number of pegs between floor and ceiling may be closely gauged according to the diameter of the wheels and the height of the floor. The largest Pulleys are not kept on the pegs, but are lined up on the floor.

The Shipley Hardware Company has been incorporated at Meyersdale, Pa., by M. C., J. T. and B. E. Shipley. The company will conduct both a wholesale and retail business.

J. RUSSELL & CO.'S BUILDERS' HARDWARE DEPARTMENT.

THE large business done by J. Russell & Co., Holyoke, Mass., necessitates carrying a heavy stock of goods. The firm's activities are not confined to its home city and environs, but extends over a much wider field. Much attention is paid to Builders' Hardware, and a large and varied stock of samples is required. These are kept in the specially designed counter and showcase here illustrated. The counter is perhaps 15 ft. long and is backed by sliding doors. In the illustration some of the doors are pushed back, revealing a fine array of sample boards



Builders' Hardware Department of J. Russell & Co.

which slide in and out in runs constructed by nailing strips of wood onto the upright partitions by which the space under the counter is divided. On top of the counter is a large showcase nearly 3 ft. high, in which large and elaborate Door Sets, &c., are shown on the upright stands with which the trade is familiar. The back of the case is divided into four slides, making it easy of access at any point. A portion of the counter is not covered by the showcase, being left clear for laying out samples, &c. The effect of the entire equipment upon a customer is sure to be favorable and impress him with the size of the stock and the excellence of the facilities for making selection.

Among the Hardware Trade.

The Thomas-Davidson-Ogilvie Hardware Company, Ltd., Shreveport, La., has been incorporated with a capital of \$200,000, of which \$75,000 is paid in. It is expected that the active capital will be increased to \$100,000 or more as soon as the present financial stringency is relaxed. The company will do a wholesale Hardware business. The officers of the concern are as follows: E. A. Thomas, president; R. J. Ogilvie, vice-president; F. Davidson, secretary and treasurer.

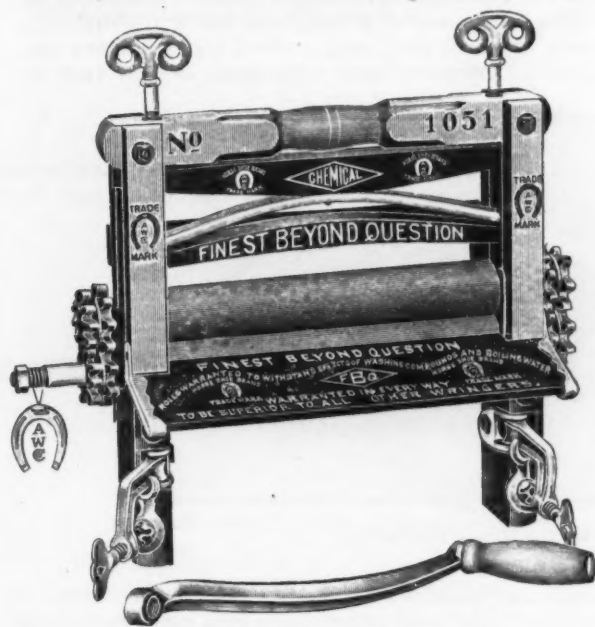
Wood Brothers, Martinsville, Ill., has purchased the Hardware stock of Byron McNary, which will be carried in connection with their Implement business, now established at that place.

The Edward Dick Hardware Company, Terre Haute, Ind., has purchased the Hardware stock of Rector & Polson, 311 Wabash avenue, and is moving the stock carried at its former location, 30 South Fourth street, to 311 Wabash avenue, where it will be merged with the goods just purchased. The entire three floors of the building will be occupied, the main floor being devoted to Builders' Hardware, Stoves, Tinware, &c., and on the second floor will be added a line of Mowers, Binders and Farm Implements, while the third floor will have a complete tin shop.

Cox Hardware Company, Paragould, Ark., has engaged in business under the management of Geo. W. Cox.

Chemical Original Dark Roll Wringer.

The American Wringer Company, 99 Chambers street, New York, is about to put on the market the Chemical Original dark roll clothes wringer, one style of which is here illustrated. This higher grade of clothes wringer has become necessary in consequence of the present methods of hasty laundering with soaps, powders and numerous washing compounds containing strong chemicals to cleanse without rubbing, which, while affecting the fabric and dirt also serve to disintegrate the rubber rolls. To neutralize this destructive tendency a new group of wringers has been produced in 10, 11 and 12 in. lengths of rolls and 1 $\frac{1}{4}$, 1 $\frac{3}{4}$ and 2 in. diameters, with both plain



Chemical Original Dark Roll Wringer.

and ball bearings, according to price. There are 32 sizes in all for folding benches, stationary tubs, narrow and wide partitions and roll rim porcelain tubs. If desired some of the kinds and sizes, so designated in the company's literature, can be furnished with inclosed cogs. With each Chemical wringer is given a five-year warrant on the rolls, which are manufactured by an improved process, although the assertion is made that with ordinary care they will wear at least 10 years. The darker hue of the rolls used in these wringers is indicative of the greater amount of pure rubber contained, which more closely resembles rubber in its natural state. There is also obviously a greater resiliency or elasticity in the rolls which yield under pressure the more readily to inequality of fabrics passing through, and at the same time there is less tendency to injure clothing and buttons and garments are wrung drier. The wringers will be manufactured and sold under the brand Chemical, as here illus-

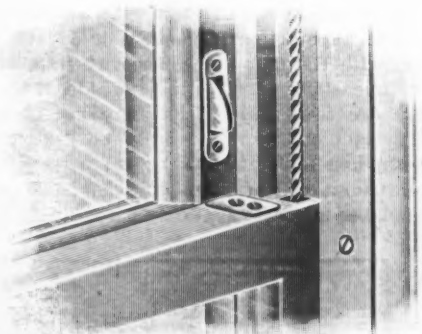


trated, which is peculiar to this highest grade type, together with the brand F B Q in a diamond, signifying "finest beyond question," as well as the familiar horse-shoe brand used on all warranted wringers made by the company. This brand of wringers will be extensively introduced to the trade by specially qualified representatives of the company, who have been provided with suitable receptacles in which they can be conveniently carried and shown. Other important features of this group are the use of selected material and handsome distinctive finishes for the various parts which increase salability. The two wood springs and folding apron are enameled in a rich royal blue with gold lettering, the curved steel tension spring is aluminized, metal parts galvanized and the selected maple frame varnished natural. Attractive literature in facsimile colors illustrating and describing

this particular line is now ready for distribution by the trade.

The Perfect Ventilating Sash Lock.

The Taylor Mfg. Company, Hartford, Conn., is placing on the market the ventilating sash lock herewith shown. It is made of steel, and is referred to as being unbreak-



The Perfect Ventilating Sash Lock.

able. The lock is designed to be placed about 5 in. above the lower sash at the point shown in the illustration. With the device either the upper or lower sash, or both, can be opened a few inches for ventilation, and yet be secure from intrusion. By pressing in the catch the window can be opened full width, and the act of closing the window automatically locks it. A bumper plate is provided to prevent marring the lower sash. The device can also be used in place of the ordinary sash lock. While the lock can be furnished in any finish desired, the standard finishes are dull nickel, bright nickel, oxidized copper and plain brass. The locks are packed one dozen in a box with template, full directions and necessary screws.

Carpenters' Chisels.

The Braunsdorf-Mueller Company, Elizabeth, N. J., for whom Warner & Haviland, 49 Warren street, New York, are sales agents, has recently put on the market in addition to a large line of mechanics' tools for many different trades, a full line of chisels for carpenters. It includes firmers, socket and tang, in both plain and beveled edges, all tanged chisels and gouges having the company's patented sliding toothed concealed bolster, also used on screw drivers, needle point ice picks, &c. There are also notching chisels for stair builders, butt chisels, tanged and socket gouges, turning chisels and turning gouges. All chisels and gouges have second growth dogwood handles and are sharpened ready for use.

THE GALTON MFG. COMPANY, Cleveland, Ohio, manufactures an extensive line of brooms and brushes made of flat and round wire, bristle and fiber. In addition to the varieties used by foundries, factories, plating establishments, heater and boiler manufacturers, painters, packers, &c., the company's product includes a full line of floor and window brushes, counter dusters, push brooms and all goods regularly carried by the hardware trade.

THE LOCKWOOD COMPANY, 79 Reade street, New York, has recently been appointed sales agent and New York representative of the Prouty Mfg. Company, Albion, Mich., which manufactures Parlor and Barn Door Hangers, Hasp Locks and Screen Door and double acting Floor Hinges.

THE W. H. DAYCOCK, JR., COMPANY, 81-83 Fulton street, New York, has just been appointed the Eastern sales agent of the Buffalo Copper & Brass Rolling Mill, Buffalo, N. Y. The company is in a position to make quick deliveries on the long lines of Sheet Copper and Brass in its various forms and finishes.

Lufkin Combination Tape for Foreign Trade.

The Lufkin Rule Company, Saginaw, Mich., and 280 Broadway, New York, has added to an extensive line of measuring tapes one for individuals handling foreign trade, either export or import, two views of which, reduced, are given herewith. Fig. 1 shows it with one side of the tape visible, the graduations being etched in accordance with the metric or French system on the upper edge and in feet and inches of the English system below, the 5-16-in. steel tape being two meters or approximately 78¾ in. long, with German silver case and stop, ½ x 1¼ in. in outer dimensions. On the reverse side of the tape, Fig. 2, there are two kinds of graduations; pounds or avoirdupois weight on the upper half and kilograms below. Thus, any one having to use English or metric equivalents in measurements and weights, has also conveniently at hand the means for quickly determining or con-

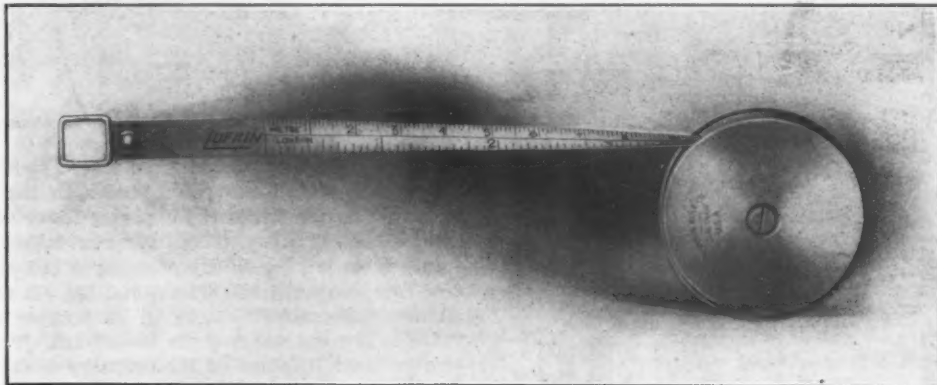


Fig. 1.—Lufkin Combination Tape, Showing Meters and Inches.

verting the equivalent of one quantity into the other without hindrance or liability of error through computation or necessity for consulting printed tables not always accessible, as this compact self-contained instrument occupies little space in a pocket. The first 10 in. of tape on one side records avoirdupois weights up to 10 lb. by sixteenths or ounces, the lower table in kilos, being a trifle more than 4½ kilograms, the units being by fiftieths of a kilo. Then follows a table in avoirdupois from 1 lb. to 1120 lb. equal to a half ton, gross, in gradation by

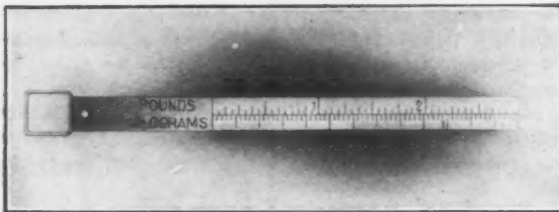


Fig. 2.—Section of Reverse Side, Having Pounds and Kilograms.

pounds, and underneath 505 6-10 kilos subdivided into unit kilos (a kilo being about 2 1-5 lb.). With this serviceable article a shipping clerk, customs officer or any one charged with such duties, can quickly ascertain the cubic contents of a package in either system of measurement, and with a knowledge of the weight can transpose it instantly either way.

Robinson Pin Vises.

The M. W. Robinson Company, 79 Chambers street, New York, has just put on the market two pin vises, as



Fig. 1.—Robinson Pin Vise, No. 1.

here shown, similar in principle but proportioned to meet varying requirements. Fig. 1 illustrates the No. 1 vise,

which is 5¼ in. long over all, with chuck ⅞ in. outer diameter, and pin capacity from 0 to 11-64 in. Fig. 2 reproduces the smaller size, No. 2, for more delicate purposes, which is 4½ in. long, with chuck ⅝ in. in diameter and a pin capacity of 0 to 5-64 in. Both have hollow handles, are finely polished, nicked and knurled, and

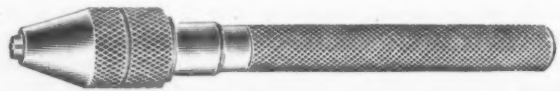


Fig. 2.—Robinson Pin Vise for Delicate Work, No. 2.

while suitable for innumerable purposes in working metals are especially designed for the use of machinists, jewelers and kindred mechanics. Both the material and workmanship are of a fine order for a discriminating trade, the chuck jaws being made of high grade tool steel, slotted transversely near their base, so that they are

easily and positively carried for opening or closing by means of three longitudinal spring steel members operated by revolving the tubular handle, there being no spiral springs or other working parts to easily get out of order. Each tool is put up in a double pasteboard box attractive in appearance and labeled on top and end.

Unique Ice Cream Disher.

The Mosteller Mfg. Company, 5 West Madison street, Chicago, includes in its line of hardware specialties the Unique ice cream disher, here illustrated. It is made

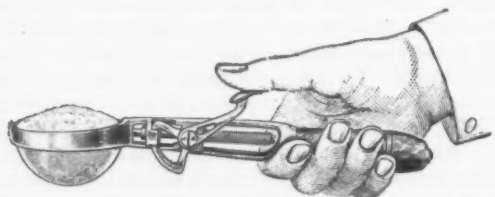


Fig. 1.—Unique Ice Cream Disher, Full of Cream.

of noncorrosive white metal, having few parts, all of which are said to be easily accessible and very strong. Fig. 1 shows the implement scooped full of cream and Fig. 2 shows how, by a pressure of the thumb on a lever,



Fig. 2.—Ice Cream Disher, Emptied.

it deposits the cream on the plate in a neat mold. It is made in sizes to serve 6, 8, 10, 12, 16 and 20 to the quart. The device is self-cleaning and rapidly and easily operated.

Fancy Scissors and Toilet Knives.

The Clauss Shear Company, Fremont, Ohio, has recently issued a new catalogue showing several articles which have been added to its line, three of which are illustrated herewith. Fig. 1 shows the colonial pattern scissors, having hand forged blades and forged handles. They are hardened in water and tempered by natural

same design are a corn knife and nail file, thus affording a complete matched set.

Steel Salamander.

R. Monroe & Sons Mfg. Corporation, Pittsburgh, Pa., manufacturer of boilers, stacks, tanks, &c., is placing on

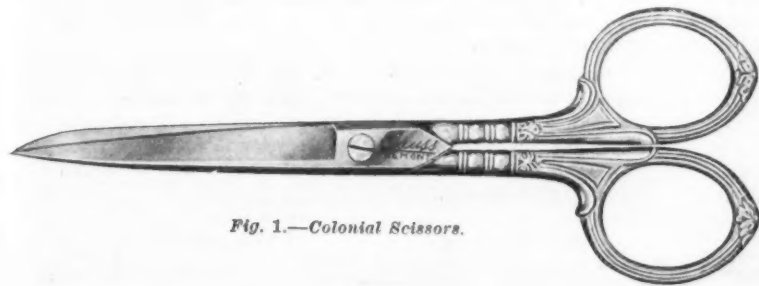


Fig. 1.—Colonial Scissors.



Fig. 2.—Horn of Plenty Scissors.

gas, offered in 3½ to 6½ in. sizes and in nickel, silver and gold platinized finishes. The Horn of Plenty scissors,



Fig. 3.—Flower Design Cuticle Knife.

shown in Fig. 2, are of the same high quality and are made on extra strong lines, although unusually light. Sizes range from 3 to 6 in., and full crocus finish, with

oxidized or gold platinized handles, is offered. In Fig. 3 is shown a special flower design cuticle knife, which is listed in oxidized, silver or gold platinized finish. In the



Steel Salamander.

the market a line of salamanders for use in heating cellars and buildings in course of construction, drying plaster and concrete, heating manufacturing plants, using either coke or gas for fuel, or for burning paper and rubbish, as illustrated herewith. These shells are 18 in. in diameter, 24 in. high, 1-16 in. thick, having at the top two circular holes, directly opposite each other, through which a bar can be inserted and the salamanders easily moved about from place to place, even though they contain a hot fire. In the larger and heavier special sizes built to order the hooks of a crane chain can be inserted when moving them. The shells are set on three legs, which keeps the salamander from tilting on uneven floors. These legs are also bent in at the top, thus forming lugs on which the cast iron circular grates rest.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

Oil	Price
Linseed, State and Western, raw	41 @ 42
City, Boiled	45 @ 46
City, Raw	44 @ 45
Raw, Calcutta, in bbls.	70 @ 71
Lard, Extra Prime, Winter	73 @ 74
Extra No. 1	53 @ 54
No. 1	49 @ 50
Cotton-seed, Crude, f.o.b. mill	30 @ 31
Summer Yellow, prime	39 @ 40
Summer White	41 @ 42
Yellow Winter	46 @ 47
Sperm, Crude	59 @ 60
Natural Winter	72 @ 73
Bleached Winter	75 @ 76
Bleached Winter, Extra	76 @ 77
Tallow, Prime	59 @ 60
Whale, Crude	35 @ 36
Natural Winter	46 @ 47
Bleached Winter	49 @ 50
Extra Bleached Winter	52 @ 53
Menhaden, Brown, Strained	41 @ 42
Light Strained	41 @ 42
Northern	41 @ 42
Southern	37 @ 38
Cocconut, Ceylon	64 @ 65
Cochin	84 @ 85
Cod, Domestic, Prime	42 @ 43
Newfoundland	44 @ 45
Red, Elaine	42 @ 43
Saponified	54 @ 55
Olive, Yellow	68 @ 69
Neatsfoot, Prime	55 @ 56
Palm, Lagos	6 @ 6 1/4

Mineral Oils—

Oil	Price
Black, 29 gravity, 25@30 cold test	13 @ 13 1/2
29 gravity, 15 cold test	13 @ 14
Summer	12 1/2 @ 13
Cylinder, light filtered	20 1/2 @ 21
Dark, filtered	18 @ 19
Paraffine, 903-907 sp. gravity	14 1/2 @ 15
903 sp. gravity	13 1/2 @ 14
883 sp. gravity	11 @ 11 1/2
Red	13 1/2 @ 14

Miscellaneous—

Material	Price
Barytes:	
White, Foreign	18.50 @ 20.50
Amer. floated	19.00 @ 20.00
Off color	13.00 @ 16.50
Chalk, in bulk	3.00 @ 3.25
In bbls.	100 lb @ 35
China Clay, Imported	11.50 @ 18.00
Cobalt, Oxide	2.50 @ 2.61
Whiting, Commercial	100 lb @ 42 @ 52
Gilders	100 lb @ 55 @ 61
Ex. Gilders	100 lb @ 60 @ 65

Putty, Commercial—

Putty	Price
In bladders	1.70 @ 1.85
In bbls, or tubs	1.20 @ 1.45
In 1 lb to 5 lb cans	2.65 @ 2.95
In 12 1/2 to 50 lb cans	1.50 @ 1.90

Spirits Turpentine—

Spirit	Price
In Oil bbls.	54 1/2 @ 55
In machine bbls.	55 @ 55 1/2

Glue—

Glue	Price
Cabinet	12 @ 15
Common Bone	7 1/2 @ 9
Extra White	18 @ 24
Fish, Liquid, 50 gal. bbls, per gallon	60 @ 1.20
Foot Stock, White	12 @ 14
Foot Stock, Brown	9 @ 11
German Common Hide	10 @ 12
German Hide	12 @ 18
Irish	13 @ 16
Low Grade	10 @ 12
Medium White	14 @ 17

Gum Shellac—

Gum	Price
Bleached, Commercial	27 @ 28
Bone Dry	40 @ 50
Buton	33 @ 35
Diamond	40 @ 48
Fine Orange	30 @ 35
A. C. Garnet	30 @ 35
G. A. L.	25 @ 26
Kala Button	20 @ 22
D. C.	50 @ 51
Octagon B.	51 @ 52
T. N.	26 @ 27
V. S. O.	18 @ 19

Colors in Oil—

Color	Price
Black, Lampblack	12 @ 14
Blue, Chinese	30 @ 45
Blue, Prussian	32 @ 36
Blue, Ultramarine	13 @ 16
Brown, Vandyke	11 @ 14
Green, Chrome	12 @ 16
Green, Paris	12 @ 24
Sienna, Raw	12 @ 15
Sienna, Burnt	12 @ 15
Umber, Raw	11 @ 14
Umber, Burnt	11 @ 14

White Lead, Zinc, &c.—

Material	Price
Lead, English white, in Oil	10 1/2 @ 10 3/4
Lead, American White	
Lots of 500 lb or over, in Oil	@ 6 1/2
Lots less than 500 lb, in Oil	@ 7 1/4
Lead, White, in oil, 25 lb tin	@ 7 1/4
Lead, White, in oil, 12 1/2 lb tin	@ 7 1/4
Lead, White, in oil, 1 to 5 lb	@ 8 1/2
Lead, American. Terms: On lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice.	

Zinc	Price
Zinc, American, dry	5 1/2 @ 5 3/4
Zinc, French:	
Antwerp, Red Seal, dry	8 1/4
Antwerp, Green Seal, dry	10 1/2
Paris, Red Seal, dry	8 1/4
Paris, Green Seal, dry	10 1/2
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12 1/4 @ 13 1/2
Lots of less than 1 ton	13 1/2 @ 13 3/4
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11 1/4 @ 11 1/2
Lots of less than 1 ton	11 1/2 @ 12 1/2
Discounts—French Zinc—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1% 25 bbls, 2%; 50 bbls, 4%.	

Dry Colors—

Color	Price
Black, Carbon	5 1/4 @ 7 1/2
Black Drop, American	3 1/2 @ 5

Color	Price
Black Drop, English	5 @ 15
Black, Ivory	16 @ 20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @ 33
Blue, Prussian	29 @ 31
Blue, Ultramarine	3 1/2 @ 15
Brown, Spanish	1 1/2 @ 1
Carmine, No. 40	33.10 @ 35.25
Green, Chrome, ordinary	3 1/2 @ 5
Green, Chrome, pure	17 @ 25
Lead, Red, bbls, 1/2 bbls, kegs	@ 6 1/2
Litharge, bbls, 1/2 bbls, kegs	@ 6 1/2
Ocher, American	100 lb @ 16.00
American Golden	2 1/2 @ 3 1/4
French	1 1/4 @ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @ 12
French	11 1/2 @ 12
German	10 @ 12
American	8 1/4 @ 8 1/2
Red, Indian, English	4 1/4 @ 6
American	3 @ 3 1/4
Red, Turkey, English	4 @ 10
Red, Tuscan, English	7 @ 10
Red, Venetian, Arser	100 lb @ 1.25
English	100 lb @ 1.15 @ 1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	1 1/4 @ 2
American, Burnt and Powdered	1 1/4 @ 2
Tale, French	100 lb @ 18.00 @ 25.00
American	100 lb @ 15.00 @ 25.00
Terra Alba, French	100 lb @ 1.00
English	100 lb @ .90 @ 1.00
American	100 lb @ .75 @ .80
American, No. 1	.75 @ .80
American, No. 2	.60 @ .65
Umber, Tkey, Bot. & Pow.	2 @ 3 1/4
Turkey, Raw and Powdered	2 1/4 @ 3 1/4
Burnt, American	1 1/4 @ 2
Raw, American	1 1/4 @ 2
Yellow Chrome, Pure	13 @ 15
Vermilion, American Lead	7 @ 25
Quicksilver, bulk	@ 65
Quicksilver, bags	@ 65
French, Imported	65 @ 70
Chinese	90 @ 1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Columbian and Domestic.....33%
North.....30%
Zimmerman's See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....34%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, 1/2 doz. pairs, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Anvils—American—

Eagle Anvils.....@ 5 1/2
Hay-Budden, Wrought.....@ 5 1/2
Trenton.....@ 5 1/2

Imported—

Peter Wright & Sons, 1/2 lb. 84 to 340 lb. 11 1/2; 350 to 600 lb. 11 1/2.

Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15&10%

Apple Parers—See Parers.

Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....10%

Augers and Bits—

Conn. Double Spur.....75@80%
Jennings' Patn., Bright.....65@70%
Black Lip or Blued.....65@70%
Boring Mach. Augers.....70%
Car Bits, 12-in. twist.....40&10%
Ford's Auger and Car Bits.....40&10%
Ft. Washington Auger Co., Concord's.....35%
Ferstner Pat. Auger Bits.....25%
C. E. Jennings & Co., No. 10 ext. lip, R. Jennings' list, 25&17 1/2

No. 30, R. Jennings' list.....25&17 1/2
Russell Jennings.....25&17 1/2
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....15%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....20%
Snell's Auger Bits.....20%
Snell's Bell Hangers' Bits.....20%
Snell's Car Bits, 12-in. twist.....20%
Snell's King Auger Bits.....20%
Wright's Jennings' Bits.....20%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's Pattern, No. 1, 1/2 doz. 12: No. 2, 1/2 doz. 10: Ford's, Clark's Pattern.....65&5%
C. E. Jennings & Co., Steer's Pat., 25: Lavigne Pat., small size, \$18.00; large size, \$26.00.....60&10%
Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$6.50@7.00
Ames.....20&10%
Universal.....20%

Ship Augers and Bits—

Ship Augers.....40&10%
Ford's.....33&6 1/2%
C. E. Jennings & Co., L'Hommedieu's.....6%
Watrous'.....33&6 1/2%
Snell's.....40%

Awl Hfts—See Handies.

Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75@3.00
Unhandl., Shidered.....gro. \$2.50@2.75
Unhandl., Patent.....gro. \$2.00@2.25

Peg Awls—

Unhandl., Patent.....gro. \$1.50@1.75
Unhandl., Shidered.....gro. \$1.00@1.25
Scratch Awls:
Handled, Com.....gro. \$3.50@4.00
Handled, Socket.....gro. \$11.50@12.00

Awl and Tool Sets—See

Sets, Awl and Tool.

Axes—

Single Bit, base weights: Per doz.
First Quality.....\$1.75@2.00
Second Quality.....\$1.25@1.50

Double Bit, base weights:

First Quality.....\$7.00@7.50
Second Quality.....\$6.50@6.75

Axle Grease—

See Grease, Axle

Axles—

Concord, Loose Collar.....4 1/2@5 1/2
Concord, Solid Collar.....4 1/2@5 1/2
No. 1 Common, Loose.....3 1/2@4 1/2
No. 1 1/2 Com., New Style.....4 1/2@5 1/2
No. 2 Solid Collar.....4 1/2@5 1/2
Half Patent:
Nos. 7, 8, 11 and 12.....65@65&10%
Nos. 13 to 14.....65@65&10%
Nos. 15 to 18.....70@70&10%
Nos. 19 to 22.....70@70&10%

Boxes, Axle—

Common and Concord, not turned lb., 5@6¢
Common and Concord, turned lb., 6@7¢
Half Patent.....lb., 9 1/2@10¢

Bait—

Fishing—

Hendryx:
A Bait.....20%
B Bait.....20%
Competitor Bait.....20%
Balances—Sash—
Caldwell new list.....50%
Fullman.....50&100%

Spring—

Spring Balances.....50&10@60%
Chattillon's:
Light Spg. Balances.....50@50&10%
Straight Balances.....40@40&10%
Circular Balances.....50@10%
Large Dial.....30%
Barb Wire—See Wire, Barb.

Bars—

Steel Crowbars, 10 to 40 lb. per lb., @ 2 1/2¢@3 1/2¢
No. 10 Ideal, Nickel Plate.....gro. \$5.50

Beams, Scale—

Scale Beams.....40%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered 1/2 doz. \$0.80; Tinned.....\$0.85
No. 11 Wire Coppered 1/2 doz. \$1.15; Tinned.....\$1.20
No. 10 Wire Tinned.....1/2 doz. \$1.50

Beaters, Egg—

Holt-Lyon Co.:
Holt, per doz. No. 5, Jap'd, \$0.80; No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.85; No. 6, Jap'd, \$1.65.
Lyons' Jap'd, per doz., No. 2 \$1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 80, \$6.00; No. 75, \$6.50; No. 100, \$7.00; No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 132, Hotel Tin'd, \$17.00; No. 200, Tumbler, \$24.50; No. 202, Tumbler Tin'd, \$29.50; No. 300, Mammoth, per doz., \$25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dorer.....\$6.50

Bellows—

Blacksmith, Standard List.....60&10@65%
Split Leather.....60&10@65%
Grain Leather.....50@50&10%

Hand—

Inch.....6 7 8 9 10
Doe.....\$5.00 5.50 6.00 6.50 7.50

Molders—

Inch.....10 12 14 16
Doe.....\$7.50 9.00 12.00 15.00

Bells—

Ordinary Goods.....75&5@75&10&5%
High grade.....70&10@75%
Jersey.....75&10%
Texas Star.....50%

Door—

Home, R. & E. Mfg. Co.'s.....55&10%
Hand—
Polished, Brass.....50&10@60%
White Metal.....50&10@50&10&5%
Nickel Plated.....50&5%
Swiss.....50&5%
Cone's Globe Hand Bells.....33&10@35%

Miscellaneous—

Farm Bells.....lb., 2 1/2¢@2 1/2¢
Church and School.....60@60&5%

Belting—

Extra Heavy, Short Lap.....60&5%
Regular Short Lap.....60&10&5%
Standard.....70&5%
Light Standard.....75%
Cut Leather Lacing.....40&10%
Leather Lacing Slides, per sq. ft. 2 1/2¢

Rubber—

Agricultural (Low Grade).....75@75&5%
Common Standard.....70&70&10%
Standard.....70@70&5%
Extra.....60&5@60&10%
High Grade.....60&5@60&10%

Bench Stops—

See Stops, Bench

Benders and Upsetters,

Tire—

Green River Tire Benders and Upsetters.....20%

Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list:
Chain, Parts, Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks—

Tackle—
Common Wooden.....75%
B. & L. R. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 80&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 80&10%; Wire Rope Snatch, 50%.
Law's Patent Automatic Lock and Junior See also Machines, Hoisting.

Boards, Stove—

Paper and Wood Lined.....40%
Embossed.....50%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....85&5%

Boils—

Carriage, Machine, &c.—

Common Carriage (cut thread):
3/4 x 6 and smaller.....70&5@—
Larger and longer.....65@—
Phila. Eagle, \$3.00 list.....80@—
Boil Ends.....65&5@—
Machine (Cut Thread):
3/4 x 4 and smaller.....70

Cages, Bird—

Henry's Brass: Series 3000, 5000,
1100, net list; 1200, 15%; 200, 300,
500
Henry's Bronze: Series 700, 800, 30%
Henry's Enamelled.....35%

Calipers—See Compasses.**Calks, Toe and Heel—**

Blunt, 1 prong, per lb. 4 1/4 @ 4 1/4¢
Sharp, 1 prong, per lb. 4 1/4 @ 5 1/4¢
Burke's, Blunt 4 1/4¢; Sharp, 4 1/2¢
Lautier, Blunt, 4 1/4¢; Sharp, 4 1/2¢
Perkins', Blunt, 1 lb. 3.5¢; Sharp, 4.15¢

Can Openers—

See Openers, Can.

Caps, Percussion—

Eley's E. B. \$2.00 @ 5¢
G. D. per M 3 1/2 @ 35¢
P. L. per M 4 1/2 @ 42¢
G. E. per M 4 1/2 @ 50¢
Musket per M 6 1/2 @ 63¢

Primers—

Berdan Primers, \$2 per M. 20¢
Primer Shells and Bullets. 15¢
All other primers per M. \$1.52 @ 1.60

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Blank Cartridges:

32 C. F., \$5.50.....10¢
38 C. F., \$7.00.....10¢
22 cal. Rim, \$1.50.....10¢
32 cal. Rim, \$2.75.....10¢
B. B. Caps, Con. Ball, Sieged. \$1.50
B. B. Caps, Round Ball.....\$1.49
Central Fire.....\$1.50
Target and Sporting Rifle. 15¢
Primer Shells and Bullets. 15¢
Rim Fire, Sporting.....50¢
Rim Fire, Military.....15¢

Casters—

Bed 65¢ @ 10¢
Plate 60¢ @ 5¢
Philadelphia 70¢ @ 10¢
Acme, Ball Bearing.....35¢
Gem (Roller Bearing).....70¢ @ 10¢
Steel Gem.....20¢
Standard Ball Bearing.....45¢
Yale (Double Wheel) low list. 40¢ @ 10¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Proof Coil—

American Coil, Straight Link:
5-16 1/2 5-16 3/4 7-16 1/2 9-16
\$9.77 6.17 5.02 4.57 4.37 4.27 4.23
3/4 1/2 1/4 to 1 1/4 to 1 1/2 to 1 1/4
\$4.17 4.07 4.02 4.12
In cash lots, deduct 25¢.

German Coil:
6-0 to 1.....70¢ @ 10¢
2 and 3.....60¢ @ 10¢
4, 5 and 6.....50¢ @ 10¢

Halter—

Halter Chains.....60¢ @ 60¢
German Pattern Halter Chains,
list July 24, '97.....60¢ @ 60¢
Covert Mfg. Co. 35¢ @ 5¢

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/2-6 3/4, Straight, with ring. \$28.00
6 1/2-6 3/4, Straight, with ring. \$29.00
6 1/2-8 1/4, Straight, with ring. \$32.00
6 1/2-10 1/4, Straight, with ring. \$37.00
NOTE—Add 2¢ per pair for Hooks.
Twist Traces; add per pair for Nos. 2
and 3, 2¢; No. 1, 3¢; No. 4, 4¢ to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c. 60¢ @ 10¢

Miscellaneous—

Jack Chain, list July 10, '03:
Iron 60¢ @ 10¢
Brass 60¢
Safety and Plumbers' Chain,
..... 60¢ @ 10¢
Gal. Pump Chain.....10¢ @ 10¢
Covert Mfg. Co.:
Broadcast, Halter, Heel, Rein, Stal-
lion.....40¢
Oneida Community
American Halter, Dog and Kennel
Chains.....35¢ @ 2¢
Niagara Dog Leads and Kennel
Chains.....15¢ @ 10¢
Wire Goods Co.:
Dog Chain.....70¢
Universal Dbl.-Jointed Chain.....50¢

Chain and Ribbon, Sash—

Oneida Community:
Steel Chain.....60¢
Pullman:
Bronze Chain, 60%; Steel Chain,
..... 60¢ @ 10¢
Sash Chain Attachments, per set. 4¢
Aluminum Sash Ribbon, per 100
ft. \$1.25 @ 33¢
Sash Ribbon Attachments, per set. 4¢

Chalk—(From Jobbers.)

Carpenters' Blue.....pro. 50¢ @ 55¢
Carpenters' Red.....pro. 45¢ @ 50¢
Carpenters' White.....pro. 40¢ @ 45¢

Checks, Door—

Bardley's.....45¢
Pullman, per gro.....\$5.00
Russwin.....30¢ @ 4¢

Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools.....50¢
Youths' Chests, with Tools.....25¢
Gentlemen's Chests, with Tools.....25¢
Farmers', Carpenters', etc., Chests,
with Tools.....25¢
Mechanists' and Pipe Fitters'
Chests, Empty.....45¢
Tool Cabinets.....45¢
C. E. Jennings & Co.'s Machinists'
Tool Chests.....75¢

Chisels—**Socket Framing and Firmer—**

Standard List.....75¢ @ 10¢
Duck 1200.....30¢
C. E. Jennings & Co.:
Socket Firmer No. 10.....25¢ @ 7 1/2¢
Socket Framing No. 15.....25¢ @ 7 1/2¢
Swan's.....65¢ @ 70¢
L. & I. J. White Co.....30¢ @ 35¢

Tanged—

Tanged Firmers.....30¢ @ 35¢
Buck Bros.....30¢
C. E. Jennings & Co. Nos. 191, 181, 25
L. & I. J. White Co.....25¢ @ 35¢

Cold—

Cold Chisels, good quality. 15¢ @ 15¢
Cold Chisels, fair quality. 11¢ @ 12¢
Cold Chisels, ordinary... 9¢ @ 10¢

Chucks—

Almond Drill Chucks.....35¢
Almond Turret Six-Tool Chuck.....40¢
Beach Pat., each \$8.00.....35¢ @ 5¢
Empire.....25¢
Blacksmiths'.....25¢
Jacobs' Drill Chucks.....35¢
Hart's Positive Drive.....25¢
Skinner Patent Chucks:
Independent Lathe Chucks.....35¢
Universal, Reversible Jaws.....35¢
Combination, Reversible Jaws.....35¢
Drill Chucks, New Model, 25%;
Standard, 45%; Skinner Pat.,
25%; Positive Drive.....40¢
Planer Chucks.....20¢
Face Plate Jaws.....35¢
Standard Tool Co.:
Improved Drill Chuck.....45¢
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40%; No. 21.....35¢
Scroll Combination, Nos. 83 and
84.....35¢
Geared Scroll, Nos. 33, 34 and 35.....25¢
Independent Iron, Nos. 18 and 318.....35¢
Independent Steel, No. 64.....35¢
Union Drill, Nos. 900, 100, 101,
102, 103, 104.....35¢
Union Car Drill.....25¢
Universal, 11, 12, 16, 17, 13, 14, 15, 40%
Universal, No. 42.....35¢
Iron Face Plate Jaws, Nos. 28, 30,
42 and 50.....35¢
Steel Face Plate Jaws, Nos. 70 and
72.....30¢
Westcott Patent Chucks:
Lathe Chucks.....50¢
Little Giant Auxiliary Drill.....50¢
Little Giant Double Grip Drill.....50¢
Little Giant Drill, Improved.....50¢
Oneida Drill.....50¢
Scroll Combination Lathe.....50¢

Clamps—

Adjustable, Hammers'.....20¢ @ 20¢
Carriage Makers', P., S. & S.
Co. 50¢ @ 10¢
Resly, Parallel.....33¢ @ 10¢
Myers' Hay Rack.....45¢
Lineman's Swedish Nevertum.....45¢
Wood Workers, Hammers'.....40¢ @ 10¢
Saw Clamps, see Vises, Saw Fillers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....50¢
Iwan's Champion, Stationary.....40¢

Sidewalk—

Star Socket, All Steel.....\$0.05 net
Star Shank, All Steel.....\$0.24 net
W. & C. Shank, All Steel.....\$0.24 net
7 1/2 in., \$3.00; 5 in., \$2.25.

Cleavers, Butchers—

Foster Bros.....30¢
Fayette R. Plumb.....30¢
L. & I. J. White Co.....30¢

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
1902 Chicago Horse, each.....\$10.75
20th Century Horse, each.....\$5.00
Lightning Belt Horse, each.....\$15.00
Chicago Belt Horse, each.....\$20.00
Stewart's Enclosed Gear
Horse, each.....\$4.75
Stewart's Patent Sheep Shear-
ing Machine, each.....\$12.75
Stewart Enclosed Gear Shear-
ing Machine, No. 8, each.....\$9.75

Clips, Axle—

Regular Styles, list July 1, '05,
80¢ @ 10¢

Cloth and Netting, Wire**—See Wire, &c.****Cocks, Brass—**

Hardware list:
Plain Ribbs, Globe, Kerosene,
Racking, Liquor, Bottling,
&c. 70¢ @ 2¢
Compression Ribbs. 60¢ @ 10¢

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Son's list.....40¢
Leather, Walter B. Stevens & Son's
list.....40¢

Compasses, Dividers, &c.

Ordinary Goods.....70¢ @ 10¢
Wm. Schollhorn Co.:
Excelsior Dividers.....60¢
Lodi Dividers.....70¢ @ 10¢

Conductor Pipe,—

L. C. L. to Dealers:

Galv.	Charcoal	Copper.
Steel.	Iron.	14, 16 & 20 oz.
Eastern:	50¢ @ 17 1/2%	45%
Central:	70¢ @ 5%	45%
Western and Southern:	65¢ @ 10%	40¢ @ 5%
So. Western:	65¢ @ 5%	40¢ @ 2 1/2%

Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.

Coilers, Water—

L. & C. Mfg. Co.:
Gal.....2 3 4 6 8
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00
Galvanized, Lined, side handles,
Gal.....2 3 4 6 8
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enamelled.....10¢
Agate Lined.....10¢

Coopers' Tools—

See Tools, Coopers'.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
and heavier, 2 1/2 @ 27¢; lighter
than 3 lb. to pair.....26¢ @ 29¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8
to 12, 23¢; No. 7, 23 1/2¢; No. 6,
24 1/2¢. In lots of 12 doz. or
over, 1 cent less per pound.
Cable Laid Italian, lb. No. 18.....37¢
Italian, lb., A. No. 18, 25¢; B, 22¢
Common India.....lb. 11¢ @ 11 1/2¢
Cotton Sash Cord, Twisted, lb. 18¢ @ 20¢
Patent Russia.....lb. 20¢
Cable Laid Russia.....lb. 21¢
India Hemp, Br'd'd.....lb. 21¢
India Hemp, Twisted.....lb. 13¢ @ 14¢
Patent India, Twisted.....lb. 17¢
Pearl Braided, cotton, No. 6, 7, lb.
27¢; No. 7, 28¢; No. 8 to 12, 26¢
Edystone, Braided, Nos. 8 to 12,
26¢; 7, 26 1/2¢; 6, 27 1/2¢.
Harmony Cable Laid Italian, Nos. 7
to 10.....\$1.20 @ 23¢
Fullman:
Wire Sash Cord.....10¢
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
Braided, 1/2 lb., Drab Cotton,
55¢; Italian Hemp, 40¢ @ 45¢
50¢; Linen, 65¢; White Cot-
ton, 50¢; Spot Cord.....50¢
Massachusetts, White.....\$1.40 @ 45¢
Massachusetts, Drab.....\$1.40 @ 45¢
Phoenix, White, Nos. 8 to 12, 27¢;
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢;
B, Drab, 40¢; B, White, 35¢;
Italian Hemp, 40¢; Linen.....57¢ @ 5¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906.....90¢ @ —%
Henry's Standard Wire Picture Cord,
old list, 85¢ @ 10¢
Turner & Stanton Co. Wire Picture
Cord.....85¢ @ 10¢

Cradles—

Grain.....40¢ @ 12 1/2%

Crayons—

White Round Crayons, Cases, 100
gro., \$8.50 @ \$7.50 at factory, but
lower prices made by jobbers
Zelnicke's Lumber.....\$1.75 gro.
White and Purple, Indelible.....\$7.50
Blue, Red, Green, Yellow and
Terra Cotta, \$8.50; Black.....\$4.00
Giant Lumber, 5 1/2 in. x 15-18 in.
round, all colors, \$16.25; Indel-
ible.....\$18.75
Genuine Soapstone, Metal Workers',
5 in. x 1 1/2 in. Round, \$2.50; 5 in. x
1 1/2 in. Square, \$1.75; 5 x 1 1/2 x 3-16,
\$2.50; 5 x 1 1/2 x 3-16.....\$3.00

Crooks, Shepherds—

Fort Madison, per doz., Heavy, \$5.50;
Light.....\$5.00

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1817, per doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor.....per doz. \$3.00
Wm. Rogers & Son.....per doz. \$2.50

Cutters— Glass—

H. B. Mayhew Co.....40%
Red Devil.....60%
R. Mfg. Co.....40%
Woodward.....50%

Meat and Food—

American.....30%
Nos. 401 402 403 404 405 406 407
Each.....\$5 \$7 \$10 \$12 \$25 \$50 \$60
Enterprise
Nos. 5 10 12 22 32
Each.....\$2 \$3 \$2.75 \$1.50 \$6 \$5 @ 25¢ @ 7 1/2%
No. 202, \$1.50.....40¢ @ 7 1/2%
P. S. & W. Co.:
Dixon's.....per doz. 33 1/4%
Nos. 1.....2
Ideal.....\$11.00 \$17.00 \$19.00 \$30.00
Hales.....10¢ @ 10¢
Little Giant.....per doz. 40¢ @ 50¢
Nos. 305 310 312 320 322
\$35.00 \$48.00 \$14.00 \$72.00 \$68.00
New Triumph No. 605, per doz. \$24.00
Russwin Food, No. 1, \$24.00; No. 2,
\$27.00.....45¢ @ 10¢
Enterprise Beef Shavers.....25¢ @ 30%

Slaw and Kraut—

Henry Diston & Sons:
Slaw and Kraut Cutters.....35%
Corn Graters.....30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....per doz. \$3.00
Combined Slaw Cutter and Corn
Grater.....per doz. \$4.00

Tobacco—

All Iron, Cheap.....doz. \$1.25 @ \$1.50
Enterprise.....25¢ @ 30¢
National, per doz., No. 1, \$21; No. 2,
\$18.....10%

Diggers, Post Hole, &c.—

Diston's:
Rapid, per doz., \$24.00.....25%
Samson, per doz., \$34.00.....25%
Iwan's Imp'd Post Hole Auger.....40%
Vaughan Pattern Post Hole Augers,
per doz., \$7.00
Perfection Post Hole Diggers, per
doz.....\$3.75
Split Handle Post Hole Diggers,
per doz., \$7.75
Hercules Pattern, per doz., \$10.00
Kohler's, per doz., Universal, \$15.00;
Little Giant, \$12.00; Hercules,
\$10.00; Invincible, \$9.00; Rival,
\$8.50; Pioneer.....\$7.50
Never-Break Post Hole Diggers, per
doz., \$24.00.....40%

Dividers—See Compasses.**Drawing Knives—**

See Knives, Drawing.

Dressers, Emery Wheel—

Sterling Emery Wheel Dressers.....35%
Sterling Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Blacksmiths' Common Drilling
Machines.....\$1.50 @ 1.75
Breast, Millers Falls.....\$1.00 @ 1.25
Brent, P. S. & W.....\$3.50 @ 4.00
Goodell Automatic Drills, 50¢ @ 10¢
Millers Falls Automatic Drills, 33¢ @ 10¢
Hatchet, Curtis & Curtis.....25¢
Hatchet, Parker's.....40¢
Hatchet, Weston's, Style H.....40¢
Hatchet, Weston's, Style H.....40¢
proved.....40¢
Hatchet, No. 012.....40¢
Hatchet, Celebrated.....40¢
Hatchet, Whitney's, P. S. & W.....50¢
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00.....33 1/4%

Twist Drills—

Bit Stock.....60¢ @ 10¢ @ 10¢
Taper and Straight Shank.....
60¢ @ 10¢ @ 10¢ @ 5%

Drivers, Screw—

Screw Driver Bits, per doz. 45¢ @ 50¢
Balsey's Screw Holder and Driver, per
doz., 2 1/2 in., \$6; 4 in., \$7.50; 6 in.,
\$8.....50¢
Buck Bros' Screw Driver Bits.....50¢
Champion.....50¢
Diston's.....50¢
Fray's Hol. H'dle Bits, No. 3, \$12.50
Ford's Brace Screw Drivers.....40¢ @ 10¢
Gay's Double Action Hatchet.....35¢
Goodell's Auto.....65¢ @ 65¢ @ 10¢
Mayhew's Black Handle.....40¢
Mayhew's Monarch.....40¢
Millers Falls, Nos. 20 and 21, 25¢ @ 10¢
Millers Falls, Nos. 11, 12, 41, 42, 15¢ @ 10¢
Smith & Hemenway Co. Never-
turn, 66%; Elmora, 60%; Star,
30¢ @ 10%

Swan's:
Nos. 7565 to 7568, 50%; No. 7540,
40¢ @ 10%

Eave Trough, Galvanized—

Territory. L. C. L. Galvanized
Galv. Charcoal Copper.
Steel. Iron. 14, 16 & 20 oz.

Eastern:	60¢ @ 10%	45%
Central:	75¢ @ 10%	65%
Western and Southern:	75%	60¢ @ 5%
So. Western:	70¢ @ 10%	55¢ @ 7 1/2%

Terms—2% for cash. Factory ship-
ments generally delivered.

See also Conductor Pipe and Elbow.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.....80%
No. 26.....50%
No. 21.....40%
No. 22.....10%
Copper.....40¢ @ 10%

Elbows, Stove Pipe—

Edwards, Standard Blue.....40¢ @ 10¢
Edwards, Royal Blue.....40¢ @ 10¢
Reeves, Dover, one piece.....40¢ @ 10¢

Emery, Turkish—

4 to 46:	4 to 46:	4 to 46:
46:	220:	Flour.
Keys.....lb. 5¢	5¢	5¢
1/4 Keys.....lb. 5 1/4¢	5 1/4¢	5 1/4¢
10-lb. cans,	6¢	6¢
10 in case.....6 1/4¢	7¢	7¢
10-lb. cans, less	than 10.....10¢	10¢
Less quantity.....10¢	10¢	10¢

NOTE—In lots 1 to 3 tons a discount
of 10% is given.

Extractors, Lemon Juice—See *Squeezers, Lemon.***Fasteners, Blind—**Zimmerman's 50¢10¢
Walling's 40¢10¢
Upson's Patent 40¢**Cord and Weight—**

Ives and Titan 33½¢

Corrugated—

Acme Corrugated Fasteners 70¢

Faucets—Cork Lined 50¢10¢60¢
Metallic Key, Leather Lined 60¢10¢70¢Red Cedar 40¢5¢10¢40¢5¢
Petroleum 70¢10¢75¢

B. & L. B. Co. 60¢10¢

Star 60¢

West Lock 50¢10¢

John Sommer's Peerless Tin Key 40¢

John Sommer's Boss Tin Key 40¢

John Sommer's Victor M. Key 50¢10¢

John Sommer's Duplex Metal Key 40¢

John Sommer's Diamond Lock 40¢

John Sommer's I. X. L. Cork Lined 40¢

John Sommer's Reliable Cork Lined 40¢

John Sommer's Chicago Cork Lined 40¢

John Sommer's O. K. Cork Lined 40¢

John Sommer's No Brand Cedar 40¢

John Sommer's Perfection Cedar 40¢

Self Measuring 40¢10¢

Enterprise, ½ doz. \$36.00 40¢10¢

Lane's, ½ doz. \$36.00 40¢10¢

National Measuring, ½ doz. \$36.00 40¢10¢

Felice Plates—See *Plates, Felice.***Files— Domestic—**

List Nov. 1, 1899.

Best Brands 70¢10¢75¢10¢

Standard Brands 75¢10¢80¢

Lower Grade 75¢10¢10¢80¢10¢

Imported—

Stubs' Tapers, Stubs' Hat, July 24, '97 33 1-3¢40¢

Fixtures, Fire Door—

Allith Underwriters' Approved 50¢

Richards Mfg. Co., 103; Special, No. 104 43.75

Fusible Links, No. 96 50¢

Expansion Bolts, No. 107 60¢10¢

Grindstone—

Inch 15 17 19 \$1

Per doz. \$3.60 3.85 4.15 4.65

P. S. & W. Co. 25¢

Reading Hardware Co. 60¢

Fodder Squeezers—See *Compressors.***Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Easy Potato 60¢10¢

Victor, Hay, 1 doz. 60¢15¢24¢

Victor, Manure 60¢

Victor, Header 60¢

Champion, Hay 60¢

Champion, Header 60¢

Champion, Hay 60¢10¢

Columbia, Hay 60¢20¢

Columbia, Manure 70¢

Columbia, Spading 70¢12½¢

Hawkeye Wood Barley 40¢

W. & C. Potato Digger 60¢20¢

Acme Hay 60¢20¢

Acme Manure, 4 time 60¢10¢45¢

Dakota Header 60¢20¢

Jackson Steel Barley 60¢20¢

Kansas Header 60¢

W. & C. Favorite Wood Barley 40¢

Plated—See *Spoons.***Frames— Wood Saw—**

White, 8'g't Bar, per doz. 75¢80¢

Red, 8'g't Bar, per doz. \$1.00\$1.15

Red, Dbl. Brace, per doz. \$1.40\$1.50

Freezers, Ice Cream—

Qt. 1 2 3 4 6

Each \$1.25 \$1.60 \$1.90 \$2.20 \$2.50

Fruit and Jelly Presses—See *Presses, Fruit and Jelly.***Fry Pans—See *Pans, Fry.*****Fuse— Per 1000 Feet.**

Hemp \$2.75

Cotton 3.80

Waterproof Spl. Taped. 3.45

Waterproof Dbl. Taped. 4.40

Waterproof Tpl. Taped. 5.15

10¢7½¢

10¢7½¢

10¢7½¢

10¢7½¢

10¢7½¢

Glasses, Level—

Chapin-Stephens Co. 65¢65¢10¢

Glue, Liquid Fish—

Bottles or Cans, with Brush 25¢10¢50¢

Elwell's 40¢

Grease, Axle—

Common Grade, gro. \$6.00 @ 6.50

Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ½ doz., 1 lb. \$1.20.

2 lb. \$2.00

Helmet Hard Oil 25¢

Griddles, Soapstone—

Pike Mfg. Co. 33½¢33½¢10¢

Grinders—

Royal Mfg. Co.:

Alundum Grinding Machines, each,

Nos. 01, \$1.75; 1A, \$2.50; 10,

\$5.00 30¢

Alundum Sickle Grinders, each,

Nos. 20, \$5.00; 20A, \$6.00; 20A,

Combined, \$6.50 30¢

Alundum Disc Grinders, each,

\$2.50 30¢

Grindstones—

Pike Mfg. Co.:

Improved Family Grindstones, ½

inch, ½ doz., \$2.00 33½¢

Richards Mfg. Co., Eli and Cycle,

Ball Bearing, mounted 40¢

Grips, Nipple—

Perfect Nipple Grips 40¢10¢2¢

Halters and Ties—

Cow Ties 60¢5¢60¢10¢

Covert Mfg. Co.:

Web 30¢2¢

Jute Rope 35¢

Sisal Rope 20¢

Cotton Rope 45¢

Hemp Rope 45¢

Oneida Community:

Am. Coil and Halters 40¢40¢5¢

Am. Cow Ties 45¢50¢

Niagara Coil and Halters 45¢50¢5¢

Niagara Cow Ties 45¢50¢10¢5¢

Hammers—

Handled Hammers—

Heller's Machinists' 55¢10¢55¢10¢5¢

Heller's Farmers' 40¢45¢40¢10¢5¢

Peck, Stow & Wilcox Co.:

Crucible Steel 50¢

Farriers' 40¢10¢5¢

Riveting 50¢

Machinists', revised list 60¢5¢

Blacksmiths' 50¢5¢

Fayette H. Plumb:

A. E. Nail 40¢2½¢4¢12½¢

Eng. and B. S. Hand 50¢10¢5¢60¢5¢

Machinists' Hammers 60¢60¢10¢

Rivet and Timmers 40¢7½¢40¢12½¢5¢

Heavy Hammers and Sledges—

Under 3 lb., per lb., 50¢. 80¢5¢—

3 to 5 lb., per lb., 40¢. 80¢5¢—

Over 5 lb., per lb., 30¢. 80¢10¢5¢—

80¢10¢5¢—

Wilkinson's Smiths' lb. 9¢40¢10¢

Handles—

Agricultural Tool Handles

Axe, Pick, etc. 60¢10¢60¢10¢5¢

Hoe, Rake, etc. 40¢

Fork, Shovel, Spade, etc. 40¢

Long Handles 40¢

D Handles 40¢

Cross-Cut Saw Handles—

Atkins' 40¢

Champion 50¢

Dismont 50¢

Mechanics' Tool Handles—

Auger, assorted gro. \$3.00 @ \$3.50

Brad Axl. gro. \$1.55 @ \$1.75

Chisel Handles, Ass'd, per gro.:

Tanged Firmer, Apple, \$2.40 @

\$2.55; Hickory \$2.15 @ \$2.40

Socket Firming, Apple, \$1.75 @

\$1.95; Hickory \$1.60 @ \$1.75

Socket Framing, Hickory, \$1.80 @ \$1.75

File, assorted gro. \$1.50 @ \$1.40

Hammer, Hatchet, etc. 60¢10¢60¢10¢5¢

Hand Saw, Varnished, doz. 80¢85¢; Not Varnished, 65¢75¢

Pine Handles:

Jack, doz. 30¢; Jack, Bolted, 75¢

Fore, doz. 45¢; Fore, Bolted, 90¢

Chapin-Stephens Co.:

Carring Tool 30¢30¢10¢

Chisel 60¢60¢10¢

File and Awl 60¢60¢10¢

Saw and Plane 30¢30¢10¢

Screw Driver 30¢30¢10¢

Miller Falls Adj. and Ratchet Auger

Handles 15¢10¢

Nicholson Simplicity File Handle, ½ doz. \$0.85 @ \$1.50

W. A. Zelnicker Supply Co.:

Hammer, ½ doz., 12 in., \$2.00;

14 in., \$2.00; 16 in., \$2.30; 18

in., \$2.50; 20 in., \$2.70; 22 in.,

\$3.00; 24 in., \$3.30; 26 in., \$3.50;

30 in., \$3.80 30¢

Sledge, ½ doz., oral, 30 in.,

\$3.80; octagon, 30 in., \$3.80;

oral, 36 in., \$4.00; octagon,

36 in., \$4.00 30¢

Axe, ½ doz., 28 to 34 in., \$5.00;

36 in., \$5.80 30¢

Adze, ½ doz., 36 in., \$5.80; 36

in., \$7.80 30¢

Pick, ½ doz., R. R. 36 in.,

\$8.00; coal, 34 in., \$5.80,

Hatchet, ½ doz., 12 to 14 in.,

\$2.00 30¢

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, etc.

Alth Mfg. Co.:

Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door 50¢

Chicago Spring Butt Co.:

Friction 25¢

Oscillating 25¢

Big Trip 25¢

Chisholm & Moore Mfg. Co.:

Baggage Car Door 50¢

Elevator 30¢

Railroad 50¢

Cronk & Carrier Mfg. Co.:

Loose Axle 60¢2½¢

Roller Bearing 70¢2½¢

Griffin Mfg. Co.:

Solid Axle, No. 10, \$12.00, 60¢10¢

Roller Bearing, No. 11, \$15.00,

60¢10¢ 60¢10¢

Roller Bearing, Ex. Hy., No.

22, \$18.00 60¢10¢

Bull Dog, \$24.00 70¢

Lane Bros. Co.:

Parlor, Ball Bearing, \$1.00;

Standard, \$3.15; No. 105, \$2.85;

New Model, \$2.80; New Cham-

pion \$2.25

Barn Door, Standard 60¢10¢

Hinged net \$6.08

Covered 60¢5¢

Special 70¢5¢

Lawrence Bros.:

Advance 55¢10¢

Cleveland 70¢7½¢

Clipper, No. 75 60¢

Crown 55¢10¢

Cyclone, No. 40 net \$6.50

Tandem, No. 50 net \$7.50

New York 55¢10¢

McKinney Mfg. Co.:

Roller Bearing, Nos. 1 and 2, 70¢

Anti-Friction 60¢

Hinged Hangers, King Charm, 60¢

Richards Mfg. Co.:

Hangers, Nos. 47, 48, 147, 247,

60¢5¢ 60¢5¢

Pioneer Wood Track, No. 3, \$2.25

Roller B'r'g St'l Track No. 12, \$2.20

Roller B'r'g St'l Track No. 13, \$2.50

Roller B'r'g, Nos. 39, 41, 43,

70¢7½¢ 70¢7½¢

Hero, Adj. Track No. 19, 50¢10¢

Adjustable Track Tandem Trol-

ley Track No. 16 50¢10¢

Seal, Steel Track No. 8 \$2.25

Auto Adj. Track No. 22 50¢5¢

Trolley B. D. No. 17, \$1.25; F.

D. No. 120, \$2.25; No. 121,

\$2.45; No. 150 \$2.50

Safety Underwriters F. D. No.

101 50¢

Tandem No. 44, 2½¢ and 3 60¢10¢

P.J.ace, Adjustable Track No.

132 50¢5¢

Royal, Adjustable Track No.

122 50¢10¢

Ives' Wood Track No. 1 \$2.25

Trolley B. D. No. 20, \$1.10

Trolley B. D. No. 24, \$1.30;

27, \$1.40; No. 28 \$1.60

Roller Bearings, Nos. 37, 38, 39,

D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pat-
tern).....60%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50
Star Double Bit.....\$3.20
Ft. Madison Cotton Hoe.....70¢@10¢
Ft. Madison Crescent Cultivator Hoe, ½ doz.....70¢@10¢
Ft. Madison Mattock Hoe.....70¢@10¢
Regular Weight.....½ doz. 40¢@5¢
Junior Size.....½ doz. \$4.00
Ft. Madison Sprouting Hoe, ½ doz.....60¢@10¢
Ft. Madison Dixie Tobacco Hoe.....75¢@10¢
Kretzinger's Cut Easy.....½ doz. 40¢@5¢
Warren Hoe.....45¢@10¢
W & C Ivanhoe.....75¢@10¢
B. B. 6 in. Cultivator Hoe.....\$3.40
B. B. 6½ in.\$3.50
Acme Weeding.....½ doz. net, \$4.35
W. & C. L'tning Shuffie Hoe, ½ doz. \$5.25

Hoisting Apparatus—
See *Machines, Hoisting.***Holders—Bit—**

Angular, ½ doz. \$24.00.....45¢@10¢
Door—
Bardeley's, Iron, 40%; Brass and Bronze.....25¢
Empire.....50¢
Pullman.....35¢
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50¢
Superior.....35½%

File and Tool—

Nicholson File Holders and File Handles.....35½¢@40¢

Fruit Jar—

Triumph Fruit Jar Holder, ½ gross, \$10.80; doz. jars.....\$1.25

Trace and Rein—

Fernald Double Trace Holder, ½ doz. pairs.....\$1.25
Dash Rein Holder, ½ doz. pairs.....\$1.25

Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....35½%

Hooks—Cast Iron—

Bird Cage, Reading.....40¢
Clothes Line, Reading List.....40¢
Coat and Hat, Reading.....45¢@20¢
Coat and Hat, Wrightville.....60¢@5¢
Harness, Reading List.....40¢

Wire—

Belt.....80¢
Wire C. & H. Hooks.....75¢@—
Bradley Metal Clasp Wire, Coat and Hat, 70¢@10¢; Ceiling.....70¢@10¢
Columbian Hdw. Co., Gem.....70¢@5¢
Parker Wire Goods Co., King.....70¢@10¢
Wire Goods Co.: Chief, 70%; Crown, 75%; Czar, 65%; V. Brace, 75%; Czar Harness, 50¢@10¢

Wrought Iron—

Bos, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$2.50.....doz. \$1.05¢@1.25
Cotton.....doz. \$1.05¢@1.25
Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65
Grass, best, all sizes, per doz. \$3.00
Grass, common grades, all sizes, per doz.\$1.50
Whiffletree.....lb. 5¢@4¢
Hooks and Eyes:
Brass.....60¢@60¢@10¢
Malleable Iron.....70¢@70¢@10¢
Crown Mfg. Co. Gate and Scuttle Hooks.....40¢
Ft. Madison Cut-Easy Corn Hooks, ½ doz. \$3.25 net
Turner & Stanton Co. Cup and Shoulder.....80¢@10¢
Bench Hooks—See *Bench Stops.*
Corn Hooks—See *Knives, Corn.*

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 50¢ 6¢
3-ply Guaranteed.....ft. 80¢ 9¢
4-ply Guaranteed.....ft. 10¢ 11¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 80¢ 9¢
Fair Quality.....ft. 10¢ 11¢

Irons—Sad—

From 1 to 10.....lb. 3¢@1¢
B. B. Sad Irons.....lb. 3¢@1¢
Mrs. Potts', cents per set:
Nos. 60 55 60 65
Jap'd Tops.....83 80 93 91
Tin'd Tops.....83 80 93 91
New England Pressing.....lb. 3¢@1¢

Bar and Corner—

Richards Mfg. Co., Bar, 60¢@10¢;
Corner.....60%

Pinking—

Pinking Irons.....doz. 80¢

Irons, Soldering

See *Coppers.*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30¢@27¢; Steel, 45¢
Lockport.....50%

Lane's Steel.....30¢@5¢
Richards' Tiger Steel, No. 130.....50¢@10¢
Smith & Hemenway Co.'s.....25%

Ladder—

Richards Mfg. Co., Ladder Jacks.....50%

Kettles—

Brass, Spun, Plain.....20¢@25¢
Enameled and Cast Iron—See *Ware, Hollow.*

Knives—

Butcher, Kitchen, &c.—

Foster Bros' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Wilmington Acme, ½ doz. \$2.65
Dent, \$2.75; Adj. Serrated, \$2.20;
Serrated, \$2.10; Yankee No. 1, \$1.50;
Yankee No. 2, \$1.15.

Drawing—

Standard List.....75¢@75¢@10¢
C. E. Jennings & Co., Nos. 45, 46, 25¢@7½¢
Jennings & Griffin, Nos. 41, 42, 60¢@7½¢
Swan's.....66¢@70¢
Watrous.....16½¢
L. & I. J. White.....20¢@25¢

Hay and Straw—

Serrated Edge, per doz. \$3.50¢@5.75
Iwan's Sickle Edge.....½ doz. \$9.50
Iwan's Serrated.....doz. \$10.00

Miscellaneous—

Farriers'.....doz. \$3.00¢@3.25
Wostenholm's.....½ doz. \$3.00¢@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber Tip.....gro. \$1.25¢@1.40
Carriage, Jap., all sizes.....gro. 40¢@45¢

Door, Mineral.....doz. 65¢@70¢
Door, Por. Jap'd.....doz. 70¢@75¢
Door, Por. Nickel.....doz. \$2.05¢@2.15
Bardeley's Wood Door, Shutters, &c. 15%

Lacing, Leather—

See *Belting, Leather.*

Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lauing Store.....25%
Myers' Noiseless Store Ladders.....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 100.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40¢@10¢
Reading.....60%

Lanterns—Tubular—

Regular, No. 0.....doz. \$1.35¢@1.50
Side Lift, No. 0.....doz. \$1.60¢@1.75
Hinge Globe, No. 0, doz. \$1.60¢@1.75
Other Styles.....40¢@40¢@10¢

Bull's Eye Police—

3-inch.....\$1.25¢@1.50

Latches—Thumb—

Roggin's Latches, with screws.....doz. 35¢@40¢

Door—

Allith Mfg. Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, 125.....½ doz. \$2.00
Richards' Bull Dog, Heavy, No. 125.....50¢@5¢
Richards' Trump, No. 127.....\$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%;
Sisal, 20%.

Leathers, Pump—

See *Pumps.*

Lifters, Transom—

R. & E.....10%

Lines—

Wire Clothes, Nos. 18 19 20
100 feet.....\$2.50 2.25 2.00
75 feet.....\$2.10 1.80 1.65

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3, 40%
Solid Braided Mason's.....30%
Silver Lake Braided Chalk, No. 0, \$4.00; No. 1, \$4.50; No. 2, \$7.00; No. 3, \$7.50.
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, \$1.50; No. 4, \$2.00; No. 4½, \$2.50; Colors, No. 3½, \$1.75; No. 4, \$2.25; No. 4½, \$2.75; Linen, No. 3½, \$2.50; No. 4, \$3.50; No. 4½, \$4.50.
Tent and Awning Lines: No. 5, White Cotton, \$7.50; Drab Cotton, \$8.50.
Clothes Lines, White Cotton: 50 ft., \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25.
Turner & Stanton Co.:
Solid Braided Chalk, Mason's and Awning Lines.....40%
Clothes Lines, White Cotton.....20%
Shade Cord, Cotton or Linen.....20%

Locks—Cabinet—

Cabinet Locks.....35½%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75¢@10¢

Sash, &c.—

Ives' Patent:
Bronze and Brass, 55¢@5¢; Crescent, 60%; Iron, 60%; Window Ventilating, 40¢@20¢; Robinson Pat. Ventilating Sash Lock, 35½%.

Pullman Patent Ventilating Lock.....35%
Reading Sash Locks.....40%

Machines—Boring—

Com. Up'r't, without Augers.....\$2.00¢@2.25

Com. Ang'l'r, without Augers.....\$2.25¢@2.50

Swan's Improved.....40¢@10¢
Jennings', Nos. 1 and 4.....55¢@7½¢
Millers' Falls.....5.75
Snell's, Upright, \$2.65; Angular, \$2.90

Corking—

Reisinger Invincible Hand Power.....½ doz. \$18.00

Fence—

Williams' Fence Machines.....each, \$5.50

Hoisting—

Moore's Anti-Friction Chain Hoist.....30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclon. High Speed Chain Hoist.....25%
Ice Cutting—
Chandler's.....12½%

Washing

Boss Washing Machine Co.: Per doz.
Boss No. 1.....\$57.00
Boss Rotary.....\$57.00
Champion Rotary Hammer No. 1.....\$57.00
Standard Champion No. 1.....\$57.00
Standard Perfection.....\$27.00
Cincinnati Square Western.....\$33.00
Unedda American, Round.....\$33.60

Mallets—

Hickory.....45¢@50¢
Lignumvita.....45¢@50¢
Timbers' Hickory and Applewood.....doz. 45¢@50¢

Mangers, Stable—

Swett Iron Works.....60%

Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.....50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See Cans, Milk.**Mills, Coffee, &c.—**

Enterprise Mfg. Co.....20¢@25¢
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria.....33½%
Parker's Box and Side.....50¢@10¢
Swift, Lane Bros. Co.....30%

Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest.....all sizes, \$1.85¢@2.00
Cheap.....all sizes, \$2.00¢@2.50
Better Grade.....all sizes, \$2.50¢@4.50

High Grade.....\$2.10 1.75 1.50 1.25 1.00 75¢ 50¢ 25¢
Continental.....75¢
Great American.....70¢
Great American Ball B'r'g, new list.....70¢
Quaker City.....70¢
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing.....50¢@10¢
Pennsylvania Golf.....50%
Pennsylvania Horse.....33½¢@5¢
Pennsylvania Pony.....40¢@5¢
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70%
Style D, High Wheel, spcl. list, 70%
Philadelphia:
Style M, S. O. K., T.....70¢@10¢
Style A, all Steel.....60¢@10¢
Style B, High Wheel.....70¢@10¢
Drexel and Gold Coin, special list.....40¢
Horse.....40¢@5¢
Pony.....40¢@5¢
36-in. Horse.....30¢@10¢
Eagle Horse.....30¢@5¢
I. X. L. Horse.....50%

Nails—

Wire Nails and Brads, Miscellaneous.....87½¢@87½¢@10¢
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos. 0 7 8 9 10
Anchor.....23 21 20 19 18.....40¢@5¢
Coleman.....13 12 11 11.....net
New Haven.....23 21 20 19 18.....40¢@5¢
Livingston.....19 18 17 16 15.....10%
Western.....½ doz. 8½¢
Jobbers' Special Brands.....per lb. 9¢@10¢

Picture—

Brass H'd's.....55 50 70 ..gro
Por. Head.....1.10 1.10 1.10 ..gro

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: Off list.
Square, Blank or Tapped.....4.80¢
Hexagon, Blank or Tapped.....5.10¢
Square, B'l'e, C., T. & R.....5.10¢
Hexagon, B'l'e, C., T. & R.....5.70¢
Hot Pressed:
Square, Blank.....5.90¢
Hexagon, Blank.....5.90¢
Square, Tapped.....5.90¢
Hexagon, Tapped.....5.90¢

Oakum—

Rest.....lb. 6½¢
U. S. Navy.....lb. 6¢
Navy.....lb. 5¢
Plumbers' Spun Oakum.....2½¢@3¢

Oil Tanks—See Tanks, Oil.**Oilers—**

Steel, Copper Plated.....75%

Chase or Paragon:
Brass and Copper.....50¢@10¢
Zinc.....65¢@10¢

Malleable, Hammers' Improved, Nos. 1, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.

American Tube & Stamping Co.:
Spring Bottom Cans.....70¢@70¢@10¢
Railroad Oilers, &c.....60¢@60¢@10¢

Openers—Can—Per doz.

Sprague, Iron Handle.....30¢@35¢
Sprague, Wood Handle.....35¢@40¢
Sardine Scissors.....\$1.75¢@3.00
Yankee Can and Bottle Opener, ½ doz., net, \$0.75; Little Gem, ½ doz., net.....\$0.65

Egg—

Hartigan Nickel Plate, ½ doz., \$2.00; Silver Plate, \$4.00.

Packing—

Asbestos Packing, Wick and Rope.....20¢@25¢

Rubber—

(Fair quality goods.)
Sheet, C. I.....11¢@12¢
Sheet, C. O. S.....11¢@12¢
Sheet, C. B. S.....12¢@13¢
Sheet, Pure Gum.....40¢@45¢
Sheet, Red.....40¢@50¢
Jenkins' '96, ½ lb. 80¢.....25%

Miscellaneous—

American Packing.....lb. 7¢@10¢
Cotton Packing.....lb. 16¢@25¢
Italian Packing.....lb. 9¢@12½¢
Jute.....lb. 4¢@4½¢
Russia Packing.....lb. 8¢@11¢

Pails, Water, Well, &c.—

See *Buckets.*

Pans—Dripping—

Standard List.....65¢@7½¢@70%
Edwards, Royal Blue.....65¢@7½%

Fry—

Common Lipped:
Nos. 1 2 3 4 5
Per doz. \$0.75 0.80 0.90 1.10 1.30

Refrigerator, Galva—

Inch.....12 14 16 18
Per doz.....\$1.75 2.25 2.80 3.15

Paper—Building Paper

Asbestos: lb.

Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft. 3½¢@10¢

Roll Board or Building Felt, 3-32 and ½ in., 45 to 60 lb., per 100 sq. ft.4¢

Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.\$4.50¢

Per roll

Roan Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll.....45¢@58¢

Medium weight, 30 lbs. to roll.....45¢@70¢

Heavy weight, 40 lbs. to roll.....75¢@78¢

Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, \$1.10; 4 ply, \$1.25.

Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....\$3.40

Red Rope Roofing, 250 sq. ft. per roll.....\$1.75

Tarred Paper—

1 ply (roll 400 sq. ft.), ton.....\$34.00¢@38.00

2 ply, roll 108 sq. ft.65¢

3 ply, roll 108 sq. ft.85¢

Slater's Felt (roll 500 sq. ft.).....80¢

Sand and Emery—

Flint Paper and Cloth 50¢@10¢—
Garnet Paper and Cloth.....25¢
Emery Paper and Cloth.....50¢@60¢

Parers—Apple—

Goodell Co.:
Family Ray State.....½ doz. \$15.00
Improved Bay State.....½ doz. \$36.00
New Lightning.....½ doz. \$7.00
Turn Table.....½ doz. \$6.00
White Mountain.....½ doz. \$5.00
Bonanza Improved.....each \$7.50
Dandy.....each \$10.00
Eureka Improved.....each \$20.00
New Century.....each \$20.00
Ranger.....each \$25.00

Livingston Nail Co.:
Daisy.....½ doz. \$1.90
Little Star.....½ doz. \$5.00
Rocking Table.....½ doz. \$6.20

Pinking Irons—

See Irons, Pinking.

Pins, Escutcheon—

Brass 50¢@50¢10%
 Iron, list Nov. 11, '85. 60¢@50¢10%

Pipe, Cast Iron Sell—

Standard, 2-6 in. 60¢10%
 Extra Heavy, 2-6 in. 70¢10%
 Fittings, Standard and Heavy, 75¢10%

Pipe, Merchant—

	Consumers, Carloads.	Steel.	Iron.
	Blk. Galv.	Blk. Galv.	Blk. Galv.
3/4 & 1/2 in. 61	48	57	41
1/2 in. 66	52	59	41
1/2 in. 68	56	61	49
2 to 6 in. 72	62	66	56
7 to 12 in. 78	64	61	46

Pipe, Vitrified Sewer—

Carload lots.
 Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory: 82%
 First-class 82%
 Second-class 85%

Pipe, Stove—

	Per 100 joints.	C. L. C. L.
Edwards' Nested:		
5 in., Standard Blue.... 7.25	7.25	
6 in., Standard Blue.... 7.75	7.75	
7 in., Standard Blue.... 8.25	8.25	
8 in., Standard Blue.... 8.75	8.75	
9 in., Standard Blue.... 9.25	9.25	
10 in., Standard Blue.... 9.75	9.75	
11 in., Standard Blue.... 10.25	10.25	
12 in., Standard Blue.... 10.75	10.75	
13 in., Standard Blue.... 11.25	11.25	
14 in., Standard Blue.... 11.75	11.75	
15 in., Standard Blue.... 12.25	12.25	
16 in., Standard Blue.... 12.75	12.75	
17 in., Standard Blue.... 13.25	13.25	
18 in., Standard Blue.... 13.75	13.75	
19 in., Standard Blue.... 14.25	14.25	
20 in., Standard Blue.... 14.75	14.75	
21 in., Standard Blue.... 15.25	15.25	
22 in., Standard Blue.... 15.75	15.75	
23 in., Standard Blue.... 16.25	16.25	
24 in., Standard Blue.... 16.75	16.75	
25 in., Standard Blue.... 17.25	17.25	
26 in., Standard Blue.... 17.75	17.75	
27 in., Standard Blue.... 18.25	18.25	
28 in., Standard Blue.... 18.75	18.75	
29 in., Standard Blue.... 19.25	19.25	
30 in., Standard Blue.... 19.75	19.75	
31 in., Standard Blue.... 20.25	20.25	
32 in., Standard Blue.... 20.75	20.75	
33 in., Standard Blue.... 21.25	21.25	
34 in., Standard Blue.... 21.75	21.75	
35 in., Standard Blue.... 22.25	22.25	
36 in., Standard Blue.... 22.75	22.75	
37 in., Standard Blue.... 23.25	23.25	
38 in., Standard Blue.... 23.75	23.75	
39 in., Standard Blue.... 24.25	24.25	
40 in., Standard Blue.... 24.75	24.75	
41 in., Standard Blue.... 25.25	25.25	
42 in., Standard Blue.... 25.75	25.75	
43 in., Standard Blue.... 26.25	26.25	
44 in., Standard Blue.... 26.75	26.75	
45 in., Standard Blue.... 27.25	27.25	
46 in., Standard Blue.... 27.75	27.75	
47 in., Standard Blue.... 28.25	28.25	
48 in., Standard Blue.... 28.75	28.75	
49 in., Standard Blue.... 29.25	29.25	
50 in., Standard Blue.... 29.75	29.75	
51 in., Standard Blue.... 30.25	30.25	
52 in., Standard Blue.... 30.75	30.75	
53 in., Standard Blue.... 31.25	31.25	
54 in., Standard Blue.... 31.75	31.75	
55 in., Standard Blue.... 32.25	32.25	
56 in., Standard Blue.... 32.75	32.75	
57 in., Standard Blue.... 33.25	33.25	
58 in., Standard Blue.... 33.75	33.75	
59 in., Standard Blue.... 34.25	34.25	
60 in., Standard Blue.... 34.75	34.75	
61 in., Standard Blue.... 35.25	35.25	
62 in., Standard Blue.... 35.75	35.75	
63 in., Standard Blue.... 36.25	36.25	
64 in., Standard Blue.... 36.75	36.75	
65 in., Standard Blue.... 37.25	37.25	
66 in., Standard Blue.... 37.75	37.75	
67 in., Standard Blue.... 38.25	38.25	
68 in., Standard Blue.... 38.75	38.75	
69 in., Standard Blue.... 39.25	39.25	
70 in., Standard Blue.... 39.75	39.75	
71 in., Standard Blue.... 40.25	40.25	
72 in., Standard Blue.... 40.75	40.75	
73 in., Standard Blue.... 41.25	41.25	
74 in., Standard Blue.... 41.75	41.75	
75 in., Standard Blue.... 42.25	42.25	
76 in., Standard Blue.... 42.75	42.75	
77 in., Standard Blue.... 43.25	43.25	
78 in., Standard Blue.... 43.75	43.75	
79 in., Standard Blue.... 44.25	44.25	
80 in., Standard Blue.... 44.75	44.75	
81 in., Standard Blue.... 45.25	45.25	
82 in., Standard Blue.... 45.75	45.75	
83 in., Standard Blue.... 46.25	46.25	
84 in., Standard Blue.... 46.75	46.75	
85 in., Standard Blue.... 47.25	47.25	
86 in., Standard Blue.... 47.75	47.75	
87 in., Standard Blue.... 48.25	48.25	
88 in., Standard Blue.... 48.75	48.75	
89 in., Standard Blue.... 49.25	49.25	
90 in., Standard Blue.... 49.75	49.75	
91 in., Standard Blue.... 50.25	50.25	
92 in., Standard Blue.... 50.75	50.75	
93 in., Standard Blue.... 51.25	51.25	
94 in., Standard Blue.... 51.75	51.75	
95 in., Standard Blue.... 52.25	52.25	
96 in., Standard Blue.... 52.75	52.75	
97 in., Standard Blue.... 53.25	53.25	
98 in., Standard Blue.... 53.75	53.75	
99 in., Standard Blue.... 54.25	54.25	
100 in., Standard Blue.... 54.75	54.75	

Planes and Plane Irons—**Wood Planes—**

Bench, first qual. 30¢@30¢10%
 Bench, second qual. 25¢@25¢10%
 Molding 25¢@25¢10%
 Chapin-Stephens Co.:
 Bench, First Quality..... 30%
 Bench, Second Quality..... 40%
 Molding and Miscellaneous..... 30%
 Toy and German..... 30%
 Union 30%

Iron Planes—

Chaplin's Iron Planes..... 30¢10%
 Union 30%

Plane Irons—

Wood Bench Plane Irons, list
 Dec. 12, '06..... 25%
 Buck Bros. 30%
 Chapin-Stephens Co. 30%
 Union 30%
 L. & J. White..... 30%

Planters, Corn, Hand—

Kohler's Eclipse..... 7 doz. \$3.00

Plates—

Felco 70¢10%10%

Pliers and Nippers—

Button Pliers..... 75¢5¢@75¢10¢5%
 Gas Burner, per doz., 5 in., \$1.50
 @ \$1.50; 6 in., \$1.45 @ \$1.50.
 Gas Pipe..... 7 5 10 12-4n.
 \$2.00 \$2.25 \$2.75 \$3.50

Acme Nippers..... 10¢5%
 Cronk & Carrier Mfg. Co.:
 American Button..... 80%
 Improved Button..... 75¢10%
 Cronk's 60%
 No. 90 Linemen's..... 50%
 Stub's Pattern..... 45%
 Combination and others..... 35%
 Heller's Farriers' Nippers, Pincers
 and Tools..... 40¢@40¢10¢5%
 P. S. & W. Timmers' Cutting Nip-
 pers..... 60%
 Wm. Schollhorn Co.:
 Bernard, 35%; Elm City, 35%;
 Paragon, 50%; Lodi, 55%;
 Swedish Side, End and Diagonal Cut-
 ting Pliers..... 50%
 Utica Drop Forge & Tool Co.:
 Pliers and Nippers, all kinds..... 30%

Plumbs and Levels—

Chapin-Stephens Co.:
 Plumbs and Levels..... 30¢@30¢10%
 Chapin's Imp. Brass Cor. 40¢@40¢10%
 Pocket Levels..... 30¢@30¢10%
 Extension Sights..... 30¢@30¢10%
 Machinists' Levels..... 40¢@40¢10%
 Diston's Plumbs and Levels..... 60¢10%
 Diston's Pocket Levels..... 60¢10%
 Stanley's Duplex..... 30%
 Woods' Extension..... 35%

Points, Glaziers'—

Bulk and 1-lb. papers..... 70¢ 9¢4¢
 1/2-lb. papers..... 70¢ 10¢
 1/4-lb. papers..... 70¢ 10¢4¢

Police Goods—

Manufacturers' Lists..... 30¢@30¢5%
 Tower's 30%

Polish—Metal, Etc—

Prestoline Liquid, No. 1 (1/4 pt.). 70¢
 doz., \$2.00; No. 2 (1 qt.), \$0.50. 30%
 Prestoline Paste..... 30%

George William Hoffman:

U. S. Metal Polish Paste, 3 oz.
 boxes, 50¢ doz. 50¢; 1 lb.
 boxes, 50¢ doz. 50¢; 1 lb.
 boxes, 50¢ doz. 50¢.
 U. S. Liquid, 8 oz. cans, 70¢ doz.,
 1 lb. doz., \$1.75.

Stove—

Black Eagle Benzine Paste, 5 lb. cans,
 10¢ doz. 10¢
 Black Eagle, Liquid, 1/4 pt. cans.,
 10¢ doz. 10¢
 Black Jack Paste, 1/4 lb. cans., 10¢ doz. 10¢
 Black Kid Paste, 5 lb. cans., each, 60¢
 Ladd's Black Beauty Liquid, per
 100 tins..... 25%
 Joseph Dixon's, 50¢ doz. 50¢
 Dixon's Plumbago..... 10%
 Firestone, 50¢ doz. 50¢
 Gem, 50¢ doz. 50¢
 Japanese, 50¢ doz. 50¢
 Jet Black, 50¢ doz. 50¢
 Peerless Iron Enamel, 10 oz. cans.,
 10¢ doz. 10¢

Peppers, Corn—

1 qt. Square..... doz. \$0.88; gro. \$8.75
 1 qt. Round..... doz. \$1.00; gro. \$10.00
 1 1/2 qt. Square..... doz. \$1.10; gro. \$11.00
 2 qt. Square..... doz. \$1.35; gro. \$13.50

Post Hole and Tree Au-

ggers and Diggers—

See also Diggers, Post Hole, do.

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢;
 6 ft., 46¢; 7 1/2 ft., 48¢.
 Steel Hitching Posts..... each \$1.30

Potato Parers—

See Parers, Potato.

Pots, Glue—

Enameled 35¢10%
 Tinned 30¢10%

Powder—

In Canisters:
 Duck, 1 lb. each 45¢
 Fine Sporting, 1 lb. each 75¢
 Rifle, 1/2 lb. each 15¢
 Rifle, 1 lb. each 25¢
 In Kegs:
 12 1/2-lb. kegs..... \$3.50
 25-lb. kegs..... \$4.50
 King's Semi-Smokeless:
 Keg (25 lb. bulk)..... \$5.50
 Half Keg (12 1/2 lb. bulk)..... \$3.50
 Quarter Keg (6 1/4 lb. bulk)..... \$1.90
 Case 24 (1 lb. cans bulk)..... \$5.50
 Half case (1 lb. cans bulk)..... \$2.50
 King's Smokeless:
 Shot Gun Rifle..... \$12.00
 Half Keg (12 1/2 lb. bulk)..... \$2.50
 Quarter Keg (6 1/4 lb. bulk)..... \$1.90
 Case 24 (1 lb. cans bulk)..... \$5.50
 Half case 12 (1 lb. c. bk.)..... 7.25 8.75

Presses—

Enterprise Mfg. Co..... 30¢35%
 Seal Presses—
 Morrill's No. 1, 70¢ doz., \$20.00..... 50%

Pruning Hooks and Shears

See Shears.

Pullers, Nail—

Cyclops 50%
 Miller's Falls, No. 3, 70¢ doz., \$12.00.
 33%10%
 Morrill's No. 1, Nail Puller, 70¢ doz.
 33%10%
 Pearson No. 1, Cyclops Spike Puller
 each \$30.00..... 50%
 The Scranton Co. Case Lots:
 No. 2B (large)..... \$3.50
 No. 3B (small)..... \$3.50
 Smith & Hemenway Co.:
 Diamond B..... 70%
 Giant 50%
 Staple Pullers, Utica and Davi-
 son 60%

Pulleys, Single Wheel—

Inch 1 1/2 1 3/4 2 3
 Awning or Tackle..... 1.05
 doz. \$0.30 .45 .60 1.05
 Hay Fork, Swivel or Solid Eye
 doz., 4 in., \$1.25; 5 in., \$1.55
 6 in., \$1.85
 Hot House, doz. \$0.65 .85 1.20
 Inch 1 1/4 1 1/2 1 3/4 2
 Screw, doz. \$0.16 .19 .23 .30
 Inch 1 1/4 1 1/2 1 3/4 2
 Side, doz. \$0.23 .40 .55 .60
 Inch 1 1/4 1 1/2 1 3/4 2

Sash Pulleys—

Common Frame; Square or
 Round End, per doz, 1 1/4 and
 2 in. 17¢@20¢
 Auger Mortise, no Face Plate
 per doz., 1 1/4 and 2 in. 20¢21¢
 Acme, No. 35, 1 1/4 in., 19¢; 2 in., 20¢
 American Pulley Co.:
 Wrought Steel American Plain
 Axle 50¢10%
 Wrought Steel, Eagle..... 17¢@20¢
 Fox-All-Steel, No. 3 and 1, 3 in.,
 70¢ doz. 50%
 Grand Rapids All Steel Noiseless..... 50%
 Niagara, No. 25, 1 1/4 in., 19¢; 2
 in., 20¢
 No. 26, Troy, 1 1/4 in., 14¢; 2 in., 16¢
 Star, No. 28, 1 1/4 in., 19¢; 2 in., 20¢
 Tackle Blocks—See Blocks.

Pumps—

Clatern 60%
 Pitcher Spout..... 75¢@75¢10%
 Wood Pumps, Tubing, do..... 30%
 Barnes Dbl. Acting (low list)..... 40¢5%
 Barnes Pitcher Spout..... 75¢10%
 Contractors' Rubber Diaphragm No.
 2, R. & L. Block Co..... 50¢10%
 Daisy Spray Pump..... 70¢ doz. 50%

Flint & Walling's, Fast Mail Hand,

(low list)..... 50%
 Flint & Walling's Fast Mail (low
 list) 50%
 Flint & Walling's Tight Top Pitcher..... 75¢10%

National Specialty Mfg. Co. Measur-
 ing, No. 2, \$2.00; 3, \$2.50..... 30%
 Myers' Pumps (low list)..... 40¢5%
 Myers' Power Pumps..... 40¢5%
 Myers' Spray Pumps..... 40¢5%

Pump Leathers—

Plunger and Valve Leathers—Per
 gro.:
 No. 2 2 1/2 3 3 1/2 4
 \$3.10 3.70 4.35 4.95 5.60

Cup Leathers—Per 100:
 Inch..... 2 1/2 3 3 1/2 4
 \$3.50 4.75 6.20 8.80

Punches—

Saddlers' or Drive, good..... doz. 60¢75¢
 Spring, single tube, good qual-
 ity \$1.75
 Revolving (4 tubes)..... doz. \$3.50

Bemis & Call Co's Cast St'l Drive..... 50%
 Morrill's Nos. 1A, 1A, 1B, 1C,
 1D, \$15.00..... 50%
 Hercules, 1 die, each \$5.00..... 50%
 Niagara Hollow Punches..... 40%
 Niagara Solid Punches..... 55¢10%
 Wm. Schollhorn Co.:
 Belt and Ticket, Bernard, 35%;
 Paragon, 50%; Lodi..... 55%
 Timmers' Hollow, P. S. & W. Co. 40%
 Timmers' Solid, P. S. & W. Co., 70¢
 doz., \$1.45..... 40%

Sliding Door, Painted Iron..... 2 1/2¢@3¢4¢
 Sliding Door, Wrought Brass,
 1 1/4 in., lb. 36¢ 30%
 Allith Mfg. Co.: Reliable Hanger
 Track 50%
 Cronk's:
 Double Braced Steel Rail..... 70¢ ft. 3/4¢
 O. N. T. Rail..... \$3.12

Griffin's:
 1 1/2 x 100 ft., 1 x 3-16 in., \$3.25;
 1 1/4 x 100 ft., \$3.75;
 Hinged Hanger, 100 ft., 1 x 3-16
 in., \$3.50; 1 1/4 x 3-16 in., \$4.00.

Lane's:
 Hinged Track, 100 ft. \$3.45
 O. N. T. 100 ft., 1 in., \$3.00; 1 1/4
 in., \$3.45; 1 1/2 in., \$4.00.
 Standard, 1 1/4 in. 100 ft. \$4.00

Lawrence Bros.:
 1 x 3-16 in., 100 ft., \$7.50; 1 1/4 x
 3-16 in., \$8.75..... 55¢7 1/2%

McKinney's:
 Hinged Hanger Track, 70 ft., 1 1/4,
 60¢5%
 1 x 3-16 Track..... 55¢7 1/2%
 Myers' Stayon Track..... 60¢5%

Richards' Mfg. Co.:
 Common, 1 x 3-4 in., \$3.00; 1 1/4 x
 3-16, \$3.25; 1 1/2 x 3-16, \$3.50.
 Special Hinged Hanger Rail..... 60¢10%
 Lag Screw Rail, No. 65..... 50%
 Gauge Trolley Track, 70 ft., No. 31,
 9¢; No. 32, 14¢; No. 33, 20¢.
 No. 50..... 60¢10%
 Nos. 61, \$3.00; 62, \$3.25; 63, \$3.50; 64,
 \$4.00; 65, \$3.25; 66, \$3.50; 67, No. 1,
 \$3.25; 68, No. 2, \$3.50.

Rakes—
 NOTE—Many goods are sold
 at net prices.
 Fort Madison Red Head Lawn..... \$3.25
 Fort Madison Blue Head Lawn..... \$2.75

Cronk's:
 Steel Garden: Champion, 75%;
 Ideal, 80%; Victor..... 80¢25%
 Queen City Lawn, 70¢ doz., 20 teeth.
 \$2.55; 21, \$3.00..... net
 Anticling Lawn, 70¢ doz..... \$4.00
 Malleable Garden..... 70¢10%
 Ideal Steel Garden, 70¢ doz., 12 teeth,
 \$15.00; 14, \$16.00; 16, \$18.00..... 80%

Kohler's:
 Lawn Queen, 20-tooth..... 70¢ doz. \$3.15
 Lawn Queen, 24-tooth..... 70¢ doz. \$3.25
 Paragon, 20-tooth..... 70¢ doz. \$2.70
 Paragon, 24-tooth..... 70¢ doz. \$2.75
 Steel Garden, 14-tooth..... 70¢ doz. \$2.40
 Malleable Garden, 14-tooth..... 70¢ doz. \$2.40

Rasps, Horse—
 Diston's 75%
 Heller Bros. 70¢5¢@70¢10¢5%
 Liveright Bros.' Gold Medal 70¢@75%
 McCaffrey's American Standard..... 60¢10¢5%
 New Nicholson..... 70¢10¢75%
 See also Files.

Razors—
 Liana Bo-ra-ic..... 60%
 Fox Razors, 70¢ doz., No. 42, 70¢00; No.
 41, \$25.00; No. 62, Platina..... 70%
 25.00.
 Red Devil..... 60%

Reels, Fishing—
 Hendry's:
 M 6, Q 6, A 6, B 6, M 6, M 16,
 Q 16, A 16, B 16, 4008, Rubber,
 Popolo, Nickered Popolo..... 20%

Saws—

Atkins' Circular	45%
Band	50%
Butcher Saws	50%
Cross Cuts	50%
One-Man Cross Cut	40%
Narrow Cross Cut	40%
Hand Rip and Panel	50%
Miter Box and Compass	40%
Mulay, Mill and Drag	45%
Wood Saws	40%
Chapin-Stephens Co.	50%
Turning Saws and Frames	50%
Diamond Saw and Stamping Works	50%
Sterling Kitchen Saws	50%
Diston's:	
Circular, Solid and Ins'ted Tooth	50%
Band, 2 to 18 in. wide	50%
Band, 1/4 to 1 1/2	50%
Crosscuts	50%
Narrow Crosscuts	50%
Mulay, Mill and Drag	50%
Framed Woodsaws	50%
Woodsaw Blades	50%
Woodsaw Rods, Tinned	50%
Hand Saws, Nos. 12, 9, 8, 14, 11, 10, 13, 16, 17, 8, 10, 11, 12	50%
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1, 0, 0, Combination	50%
Compass, Key Hole, &c.	50%
Butcher Saws and Blades	50%
C. E. Jennings & Co.'s:	
Back Saws, Bay State Brand	50%
Butcher Saws	50%
Compass and Key Hole Saws	50%
Framed Wood Saws	50%
Hand Saws	50%
Wood Saw Blades	50%
Millers Falls:	
Butcher Saws	50%
Star Saw Blades	50%
Massachusetts Saw Works:	
Victor Kitchen Saws	50%
Butcher Saw Blades	50%
Peace & Richardson's Hand Saws	50%
Simonds:	
Circular Saws	50%
Crescent Ground Cross Cut Saws	50%
One-Man Cross Cuts	50%
Gang Mill, Mulay and Drag Saws	50%
Band Saws	50%
Back Saws	50%
Butcher Saws	50%
Hand Saws	50%
Hand Saws, Key Hole, &c.	50%
Compass	50%
Wood Saws	50%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws	50%
Hack Saw Blades and Frames—	
Atkins' Hack Saw Blades A & A	50%
Diston's:	
Concave Blades	50%
Keystone Blades	50%
Hack S. Frames	50%
Simonds' File Co.	50%
C. E. Jennings & Co.'s:	
Back Saw Frames, Nos. 175, 180	50%
Hack Saws, Nos. 175, 180, complete	50%
Goodell's Hack Saw Blades	50%
Griffin's Hack Saw Frames	50%
Griffin's Hack Saw Blades	50%
Star Hack Saws and Blades	50%
Sterling Hack Saw Blades	50%
Sterling Power Hack Saw Machines	50%
each, No. 1, \$25.00; No. 2, \$30.00; 10%	
Victor Hack Saw Blades	50%
Victor Hack Saw Frames	50%

Scroll—

Barnes, No. 1, \$15	50%
Barnes' Scroll	50%
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$15; with boring attachment, \$20	
Leiter, complete, \$10.00	50%
Rogers, complete, \$9.50 and \$1.00	50%

Scales—

Family, Turnbull's	50%
Counter:	
Hatch, Platform, 1/2 oz. to 4 lbs.	50%
Two Platforms, 1/2 oz. to 8 lbs.	50%
Union Platform, Plain, \$1.70 to \$1.90	
Union Platform, Stpd. \$1.85 to \$2.15	
Chatillon's:	
Eureka	50%
Favorite	50%
Crocker's Trip Scales	50%
The Standard Portable	50%
The Standard R. R. and Wag-on	50%

Scrapers—

Box, 1 Handle	50%
Box, 2 Handle	50%
Ship	50%
Chapin-Stephens Co., Box	50%
Richards Mfg. Co., Foot	50%

Screws—Bench and Hand

Bench, Iron, dos., 1 in.	50%
2 1/2; 1 1/2, \$3.00 to \$3.25; 1 1/4, \$3.50 to \$3.75	
Hand, Wood	50%
Chapin-Stephens Co., Hand	50%

Coach, Lag and Hand Rail—Lag, Cone Point	50%
Coach, Gimlet Point	50%
Hand Rail	50%

Jack Screws—

Standard List	50%
Millers Falls	50%
Swett Iron Works	50%

Machine—

Cut Thread, Iron, Brass or Bronze:	
Flat Head or Round Head	50%
Fillister Head	50%
Roll Thread, F. H. or R. H.	50%
Iron	50%
F. H. or R. H., Brass, Nos. 8 to 14	50%

Set and Cap—

Set (Iron)	50%
Set (Steel), net advance over Iron	50%
Sq. Hd. Cap	50%
Hex. Hd. Cap	50%
Rd. Hd. Cap	50%
Fillister Hd. Cap	50%

Wood—

Flat Head, Iron	50%
Round Head, Iron	50%
Flat Head, Brass	50%
Round Head, Brass	50%
Flat Head, Bronze	50%
Round Head, Bronze	50%
Drive Screws	50%

Scroll Saws—

See Saws, Scroll.

Scythes—

Grass, No. 1, Plain	50%
Clipper, Bronzed Webb	50%
No. 3 Clipper, Pol'd Webb	50%
No. 6 Clipper and Solid Steel	50%
Bush, Weed and Bramble, No. 2	50%
Grain, No. 1	50%
Bronzed Webb, No. 1	50%
No. 3 and 4 Clipper, Grain	50%
Solid Steel, No. 6	50%

Seeders, Raisin—

Enterprise	50%
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Sets—Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7	
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18	
Garden Tool Sets	
Ft. Madison Three Plows, Hoe, Rake and Shovel	50%

Sets, Nail—

Octagon	50%
Huck Bros	50%
Cannon's Diamond Point	50%
Mayhew's	50%
Snell's Corrugated, Cup Pt.	50%
Snell's Knurled, Cup Pt.	50%
Victor Knurled Cup Pt.	50%

Rivet—

Regular list	50%
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Saw—

Atkins:	
Criterion	50%
Adjustable	50%
Diston's Star, Monarch and Triumph	50%
Morrill's No. 1	50%
Nos. 3 and 4, Cross Cut	50%
No. 5, Mill	50%
Nos. 10, 11, 96	50%
No. 1 Old Style	50%
Special	50%
Giant Royal Cross Cut	50%
Royal, Hand	50%
Tainter Positive	50%

Shaving—

Fox Shaving Sets, No. 30	50%
Smith & Hemenway Co.'s	50%

Sharpeners, Knife—

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	50%
Mounted Kitchen Sand Stone	50%
Natural Grit Carving Knife Hones	50%
Quick Cut Emery Carving Knife Hones	50%
Quick Edge Pocket Knife Hones	50%

Skate—

Smith & Hemenway Co., Eureka	50%
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Shaves, Spoke—

Iron	50%
Wood	50%
Bailey's (Stanley R. & L. Co.)	50%
Chapin-Stephens Co.	50%
Goodell's	50%

Shears—

Cast Iron	50%
Best	50%
Good	50%
Cheap	50%
Straight Trimmers, &c.	
Best quality Jap.	50%
Best quality, Nickel	50%
Tailors' Shears	50%
Acme Cast Shears	50%
Heinrich's Tailor's Shears	50%
Wilkinson Shear & Cutlery Co.	50%
Sheep, 1900 list	50%
Grass	50%
Horse or Mule	50%

Tinners' Snips—

Steel Blades	50%
Steel Laid Blades	50%
Forged Handles, Steel Blades, Berlin	50%
Heinrich's Snips	50%
Jennings & Griffin Mfg. Co.'s	50%
Niagara Snips	50%
P. S. & W. Forged Handles	50%
P. S. & W.	50%

Pruning Shears—

Cronk's Hand Shears	50%
Cronk's Wood Handle Shears	50%
Diston's Combined Pruning Hook and Saw	50%
Diston's Pruning Hook only	50%
John T. Henry Mfg. Co.	50%
Pruning Shears, all grades	50%
P. S. & W. Co.	50%
Columbian Cutlery Co.	50%
Hedge, Wilcutt Brand	50%
Lawn and Border, Wilcutt Brand	50%

Sheaves—Sliding Door—

Reading	50%
R. & E. list	50%

Sliding Shutter—

Reading list	50%
R. & E. list	50%

Shells—Shells, Empty—

Brass Shells, Empty:	
Climax, 10 and 12 gauge	50%
Club, Rival, 65&5; First Quality	50%
Paper Shells, Empty:	
New Rapid, 10, 12, 16 and 20 gauge	50%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade	50%
Union, League, 12 and 12 gauge	50%
Rival Grade	50%
New Climax Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge; Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade	50%

Shells, Loaded—

Loaded with Black Powder	50%
Loaded with Smokeless Powder, medium grade	50%
Loaded with Smokeless Powder, high grade	50%
Union Metallic Cartridge Co.:	
New Club, Black Powders	50%
Nitro Club, Smokeless Powders	50%
Arrow, Smokeless Powders	50%
Winchester:	
Smokeless Repeater Grade	50%
Smokeless Leader Grade	50%
Black Powder	50%

Shingles, Metal—Per Sq.

Edwards Mfg. Co.:	
Painted	50%
Galv.	50%
14 x 20	50%
14 x 14	50%
7 x 10	50%
Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	50%
Dixie, 14 x 14 in.	50%
Dixie, 7 x 10 in.	50%

Shoes, Horse, Mule, &c.—

F.O.B. Pittsburgh:	
Iron	50%
Steel	50%
Burden's, all sizes	50%

Shot—

Drop, up to B	50%
Drop, B and larger	50%
Buck	50%
Chilled	50%
Dust	50%

Shovels and Spades—

Association List, Nov. 15, 1902	50%
Avery Stamping Co.	50%

Snow Shovels—

Long Handle	50%
Wood and Mail, D. Handle	50%

Sieves and Sifters—

Hunter's Imitation	50%
Hunter's Genuine	50%

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each	50%
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Sieves, Seamless Metallic

Mesh	50%
Iron Wire	50%
Tinned Wire	50%

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch	50%
Mesh 18, Nested	50%
Mesh 20, Nested	50%
Mesh 24, Nested	50%

Sinks, Cast Iron—

Painted, Standard list:	
12 x 12 to 22 x 36 in.	50%
20 x 40 to 24 x 50 in.	50%
24 x 60 to 24 x 120 in.	50%
Barnes' low list:	
Up to and including 20 x 36 in.	50%
20 x 40 to 24 x 50 in.	50%

NOTE—There is not entire uniformity in lists used by jobbers.

Skins, Wagon—

Cast Iron	50%
Steel	50%

Slates, School—

Factory Shipments:	
"D" Slates	50%
Eureka, Unexcelled Noiseless	50%
Victor A, Noiseless	50%

Slaw Cutters—See Cutters.**Snaps, Harness—**

German	50%
Covert Mfg. Co.	50%
Derby, 2 1/2; Yankee, 3&2 1/2; Yankee Roller, 3&2 1/2	
High Grade, 40%; Trojan	50%
Jockey	50%

Snaths—

Scythe	50%
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Snips, Tanners—See Shears.**Spoons and Forks—****Silver Plated—**

Good Quality	50%
Cheap	50%
International Silver Co.	50%
1847 Rogers Bros., 40&10%; Rogers & Hamilton	50%
Rogers & Bro., William Rogers' Eagle Brand	50%
Anchor Rogers Brand	50%
Wm. Rogers & Son	50%

Miscellaneous

German Silver	50%
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Tinned Iron—

Teas	50%
Tables	50%

Springs—Door—

Bardley's Spring and Check	50%
Chicago (Coil)	50%
Gem (Coil)	50%
Pullman (Coil)	50%
Reliance (Coil)	50%
Star (Coil)	50%
Torrey's Rod, 3/8 in.	50%

Carriage, Wagon, &c.—

1 1/2 in. and Wider:	
Black	50%
Half Bright	50%
Bright	50%
Painted Seat Springs:	
1 1/2 x 2 x 26	50%
1 1/2 x 3 x 23	50%

Sprinklers, Lawn—

American Foundry & Mfg. Co.:	
Cactus, 65%; Japanese, 70%; National, 70%	
Enterprise	50%
Philadelphia No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	

Squares—

Nickel plated	50%
Steel and Iron	50%
Rosewood Hdl. Try Squares and T-Bevels	50%
Iron Hdl. Try Squares and T-Bevels	50%
Diston's Try Squares and Bevels	50%
Rosewood Handle, 60&10%; Iron Square and Bevel	50%

Squeezers, Lemon

Wood, Common, gro., No. 0, \$5.50 to \$5.50; No. 1, \$6.25 to \$6.50	
Wood, Porcelain Lined:	
Cheap	50%
Good Grade	50%
Tinned Iron	50%
Iron, Porcelain Lined	50%

Staples—

Barbed Blind	50%
Electricians' Association list	50%
Fence Staples, Plain, \$2.15; Galvanized	50%
Poultry Netting Staples	50%

Steels, Butchers'—

Dick's	50%
Foster Bros.	50%

Steelyards—

Scythe Stones—

Pike Mfg. Co., 1901 list:	
Black Diamond S. S.	gro. \$12.00
Lamotte S. S.	gro. \$11.00
White Mountain S. S.	gro. \$9.00
Green Mountain S. S.	gro. \$8.00
Extra Indian Pond S. S.	gro. \$7.50
No. 1 Indian Pond S. S.	gro. \$7.00
No. 2 Indian Pond S. S.	gro. \$6.50
Leader Red End S. S.	gro. \$4.50
Quick Cut Emery	gro. \$10.00
Pure Corundum	gro. \$15.00
Crescent	gro. \$7.00
Emery Scythe Rifles, 2 Coat, \$3	
Emery Scythe Rifles, 3 Coat, \$10	
Emery Scythe Rifles, 4 Coat, \$12	
Balance of 1904 list 33 1/2%	
Electro (Artificial)	gro. \$12.00
Lightning (Artificial)	gro. \$18.00

Stoppers, Bottle—

Victor Bottle Stoppers	gro. \$9.00
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Stops—Bench—

Millers Falls	15¢ 10%
Morrill's, No. 1, 10 doz.	\$1.00
Morrill's, No. 2, 12 doz.	\$1.20

Door—

Chapin-Stephens Co.	50¢ 50¢ 10%
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Plane—

Chapin-Stephens Co.	30%
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Straps—Box—

Acme Embossed, case lots	20¢ 10¢ 10%
Cary's Universal, case lots	20¢ 10¢ 10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz.	60¢ 60¢ 10%
Socket	doz. \$1.68
Excelsior Stretcher and Tack Hammer Combined, \$ doz.	\$6.00

Stuffers, Sausage—

Enterprise Mfg. Co.	25¢ 7 1/2%
National Specialty Co., list Jan. 1, 1902	30¢ 5%
P., S. & W. Co.	40¢ 10¢ 5%

Sweepers, Carpet—

Bissell Carpet Sweeper Co.	\$ doz.
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Superba, Crotch Mahogany	\$36.00
Triumph, Fancy Veneer	\$33.00
Parlor Queen, Fig. Rosewood	\$30.00
Elite, Hungarian Ash	\$29.00
Am. Queen, Fig. Mahogany	\$27.00
Ideal, Bird's-Eye Maple	\$25.00
Grand Rapids, Nickel	\$24.00
Japan	\$22.00
Standard, Nickel	\$22.00
Crown Jewel, Nickel	\$21.00
Crystal, Glass Top	\$36.00
Grand, 17 in. wide	\$36.00
Club, 24 in. wide	\$34.00
Hall, 28 in. wide	\$60.00

NOTE—Rebates: 50¢ per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots; \$2.50 per dozen on twenty-five dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks	90¢ 25%
American Out Tacks	90¢ 25%
Sweden's Cut Tacks	90¢ 25%
Sweden's Upholsterers'	90¢ 25%
Gimp Tacks	90¢ 25%
Lace Tacks	90¢ 25%
Trimmers' Tacks	90¢ 25%
Looking Glass Tacks	65%
Bill Posters' and Railroad Tacks	90¢ 40%
Hungarian Nails	80¢ 10%
Finishing Nails	70%
Trunk and Clout Nails	80%

NOTE—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks	90¢ 10¢ 10¢ 10¢ 5%
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See also Nails, Wuc.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:	
Gal. Gasoline	Oil
30	\$3.00
60	\$4.00
120	\$6.75

Tapes, Measuring—

American Asses' Skin	50¢ 10%
Patent Leather	25¢ 10¢ 5%
Steel	33 1/2¢ 5%
Chesterman's	25¢ 10¢ 5%

Keuffel & Esser Co.:	
Favorite, Ass Skin	40¢ 10¢ 50%
Favorite, Duck and Leather	25¢ 5¢ 25¢ 10%
Metallic and Steel, lower list, 30¢ 35¢ 5%; Pocket, 30¢ 35¢ 5%.	

Luffin's:	
Asses' Skin	40¢ 10¢ 50%
Metallic	30¢ 30¢ 45%
Patent Bend. Leather	25¢ 5¢ 25¢ 10%
Pocket	40¢ 40¢ 5%
Steel	33 1/2¢ 35%

Wiebusch & Hilger:	
Chesterman's Metallic, No. 34L	25%
Chesterman's Steel, No. 1039L	35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 1/4-inch and larger	per 100 lbs. \$2.75 to \$3.00
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Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c.	50¢ 33 1/2%
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Ties, Bale—Steel Wire—

Single Loop	80¢ 10¢ 5%
Monitor, Cross Head, &c. 70¢ 2 1/2%	

Tinner's Shears, &c.—

See Shears, Tinner's, &c.

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See Benders and Upsetters, Tire.

Tools—Coopers'—

L. & I. J. White	20¢ 20¢ 5%
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Haying—

Myers' Hay Tools	45%
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Miniature—

Smith & Hemenway Co.'s, Davidson, \$ doz., Nickel Plated, \$1.50; Gold Plated	\$2.00
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Saw—

Atkins' Cross Cut Saw Tools	35¢ 5%
Simonds' Improved	33 1/2%
Simonds' Crescent	30%

Ship—

L. & I. J. White	25%
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Transom Lifters—

See Lifters, Transom.

Traps—Fly—

Balloon, Globe or Acme, doz.	\$1.15 to \$1.25; gro. \$11.50 to \$12.00
Harper, Champion or Paragon, doz. \$1.25 to \$1.40; gro. \$13.00 to \$13.50	

Game—

Imitation Onocida	75¢ 10%
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Newhouse	40¢ 45%
Ulawley & Norton	40%
Victor	75¢ 75¢ 10%
Onocida Community Jump	80%
Hector	75¢ 75¢ 10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes	12¢
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Mouse, Round or Square Wire	doz. 85¢ 90¢
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Marty French Rat and Mouse Traps (Genuine):	
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No. 1, Rat, \$ doz., \$13.25. \$11.50 doz.	
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No. 3, Rat, \$ doz., \$6.50. \$5.75 doz.	
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No. 3 1/2, Rat, \$ doz., \$5.25. \$4.70 doz.	
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No. 4, Mouse, \$ doz., \$3.85. \$3.00 doz.	
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No. 5, Mouse, \$ doz., \$3.00. \$2.25 doz.	
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Onocida Community:	
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Out o' Sight, Mouse, \$ doz., \$0.60	
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Out o' Sight, Rat, \$ doz., 1.25	
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Easy Set, Mouse, \$ doz., .35	
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Easy Set, Rat, \$ doz., 1.00	
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Wood Choker, Rat, \$ doz. holes, .12	
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Premier Tin Choker, 5 hole, \$ doz. traps75
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Trowels—

Dixton Brick and Pointing	25%
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Dixton Plastering	20%
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Dixton "Standard Brand" and Oak den Trowels	30%
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Kohler's Steel Garden Trowels, \$ doz. 5 in., \$4.00; 6 in., \$4.00.	
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Never-Break Steel Garden Trowels	\$1.00
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Woodrough & McParlin, Plastering	25%
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Trucks, Warehouse, &c.—

B. & L. Block Co.:	
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New York Pattern	50¢ 10%
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Western Pattern	60¢ 10%
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Handy Trucks	\$ doz. \$16.00
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Grocery	\$ doz. \$15.00
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McKinney Trucks	each, net \$10.00
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Model Stove Trucks	\$ doz. \$18.50
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Tubs, Wash—

M'f'g's list, price per gross.	
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No. 0 1 2 3	
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Galvanized. \$67 \$79 \$89 \$99 10%	
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Twine, Miscellaneous—

Flax Twine:	
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No. 9, 1/4 and 1/2-lb. Balls. \$3 to \$5¢	
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No. 12, 1/4 and 1/2-lb. Balls. \$1 to \$3¢	
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No. 18, 1/4 and 1/2-lb. Balls. \$1 to \$2¢	
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No. 24, 1/4 and 1/2-lb. Balls. 17 1/2¢ to 19 1/2¢	
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No. 36, 1/4 and 1/2-lb. Balls. 17 to 19¢	
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Chalk Linc. Cotton 1/2-lb. Balls	26¢ 31¢
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Cotton Mops, 6, 9, 12 and 15 lb. to doz.	11¢ 19¢
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Cotton Wrapping, 5 Balls to lb., according to quality	15¢ to 23¢
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American 2-Ply Hemp, 1/4 and 1/2-lb. Balls	14¢ to 15 1/2¢
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American 3-Ply Hemp, 1-lb. Balls	15 1/2¢ to 16 1/2¢
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India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine)	10¢ to 11 1/2¢
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India 3-Ply Hemp, 1-lb. Balls	10 1/2¢ to 11 1/2¢
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India 3-Ply Hemp, 1 1/2-lb. Balls	10 to 11¢
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2, 3, 4 and 5-Ply Jute. 1 1/2-lb. Balls	13 1/2¢ to 14 1/2¢
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Mason Line, Linen, 1/2-lb. Bls. 17¢	
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No. 26 Mattress, 1/4 and 1/2-lb. Balls, according to quality	30¢ to 60¢
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Wool, 3 to 6 ply	B 9¢; A 10¢
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Vises—

Solid Box	50¢ 50¢ 10%
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Parallel—

Athol Machine Co.:	
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Simpson's Adjustable	40%
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Standard	40%
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Amateur	25%
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Columbian Hdw. Co.	40%
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Fisher & Norris Double Screw, net, each, Nos. 2, \$10.50; 3, \$16.00; 4, \$20.50; 5, \$27.00.	
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Fulton Mach. & Vise Co.:	
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Reed, Swivel	25%
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Star, Solid Jaw	40%
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Hollands:	
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Machinists'	40¢ 40¢ 5%
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Keystone	65¢ 5¢ 70%
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Lewis Tool Co.:	
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Adjustable Jaw	30%
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Monarch, 50%; Solid Jaw	50%
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Massey Vise Co.:	
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Perfect, 15%; Lightning Grip	15%
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Merrill's	20%
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Millers Falls Oval Slide Pattern	60¢ 10%
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Parker's:	
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Victor, 20¢ 25%; Regulars	20¢ 25%
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Vulcan's	40¢ 45%
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Combination Pipe	55¢ 60%
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Prentiss	20¢ 25%
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Rock Island	25%
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Snediker's X. L.	33 1/2%
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Stephens'	33 1/2%
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Saw Filers—

Dixton's D 3 Clamp and Guide, \$ doz., \$24.00, 30%; Clamps	30%
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Perfection Saw Clamps, \$ doz. \$4.50	
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Reading	60%
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Wood Workers—

Fulton Mach. & Vise Co.:	
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Reed	25%
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Star	40%
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Massey Vise Co.:	
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Lightning Grip, 15%; Perfect	15%
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Wyman & Gordon's Quick Action, 6 in., \$4.00; 9 in., \$7.00; 14 in., \$8.00.	
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Miscellaneous—

Holland's Combination Pipe	60¢ 60¢ 5%
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Massey's Quick Action Pipe	40%
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